Vol. 1004 Number 5

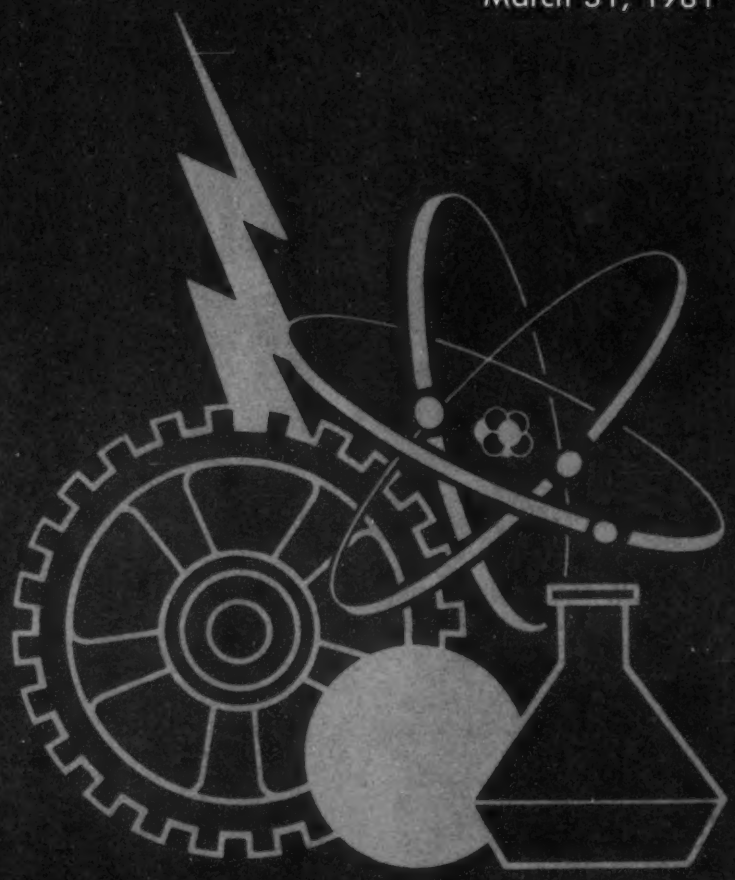
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

March 31, 1981



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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

March 31, 1981 Volume 1004 Number 5

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the list of PCT member countries and the most recent PCT rule changes see the notice appearing at 1001 O.G. 14 in the OFFICIAL GAZETTE of December 9, 1980.

Note that the international fees have been increased as of January 1, 1981. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International fees	
Basic fee (first 30 pages)	265.00
Basic supplemental fee (for each sheet over 30)	5.00
Designation fee	64.00

SIDNEY A. DIAMOND,
January 13, 1981. *Commissioner of Patents and Trademarks.*

Board of Appeals Decisions Rendered in the Month of Feb. 1981

Affirmed	169
Affirmed in Part	18
Reversed	53
Total	240

U.S. Department of Commerce Patent and Trademark Office

PUBLIC ADVISORY COMMITTEE FOR TRADEMARK AFFAIRS
Notice of Open Meeting

In accordance with Section 10(a) (2) of the Federal Advisory Committee Act (Public Law 92-463), announcement is made of the following Committee meeting:

The Public Advisory Committee for Trademark Affairs will meet from 9:30 a.m. until 5:00 p.m. on Apr. 9, 1981, at The Washington Hilton Hotel, 1919 Connecticut Ave., N.W., Washington, D.C.

The Committee was first established in 1970 and was re-established in 1979 to advise the Patent and Trademark Office of steps that can be taken to increase the effectiveness of administration of the Trademark Act and to provide a continuing source of information from the private sector to the government.

The agenda for the meeting is as follows:

(1) Trademark Fees
(2) Trademark Housekeeping Legislation
(3) Training of Trademark Examiners
(4) Trademark Operation Administrative Problems

The meeting will be open to public observation; approximately twelve (12) seats will be available for the public on a first-come first-served basis. If time permits, oral comments by the public of three (3) minutes on each topic within the above agenda will be allowed. To insure proper consideration at the meeting, any comments or suggestions relating to the agenda items should be submitted in writing before Apr. 2, 1981. Further comments and suggestions will be accepted after the meeting on any of the matters discussed.

Copies of the minutes will be available upon request.

Inquiries may be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231. Please mark all correspondence to the attention of Committee Control Officer, Patricia M. Davis, Office of Trademark Program Control, Room CP2-3D23. Telephone: 703-557-3881.

RENE D. TEGTMEYER,
Feb. 31, 1981. *Acting Commissioner of Patents and Trademarks.*

Approved:
ROBERT B. ELLERT,
Feb. 28, 1981. *Acting Assistant Secretary for Productivity, Technology and Innovation.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

D. 230,326, Re. S.N. 213,142, Filed Dec. 4, 1980, Cl. D 83–8 B, NIPPLE, Stephen B. Sofro, Owner of Record: *Reliance Products Corp., Woonsocket, R.I.,* Attorney or Agent: Thomas F. Smegal, Jr., et al., Ex. Gp.: 290

Re. 30,277, Re. S.N. 208,714, Filed Nov. 20, 1980, Cl. 339/74 R, ELECTRICAL TAB RECEPTACLE, Reginald John Simmons, Owner of Record: *AMP Inc., Harrisburg, Pa.,* Attorney or Agent: Jay L. Seitchik, et al., Ex. Gp.: 322

3,868,889, Re. S.N. 211,418, Filed Nov. 28, 1980, Cl. 91/506, FLUID DEVICE HAVING MEANS FOR ALIGNING A CYLINDER BARREL, Wilfred S. Bobier, Owner of Record: *Inventor,* Attorney or Agent: Andrew R. Basile, et al., Ex. Gp.: 343

3,980,136, Re. S.N. 172,720, Filed July 28, 1980, Cl. 166/280, FRACTURING WELL FORMATIONS USING FOAM, Ray A. Plummer, et al., Owner of Record: *Big Three Industries, Inc., Houston, Tx.,* Attorney or Agent: Kenneth E. Kuffner, et al., Ex. Gp.: 354

4,087,380, Re. S.N. 212,695, Filed Dec. 3, 1980, Cl. 252/429 B, POLYMERIZATION CATALYST, David L. Hyde, et al., Owner of Record: *BP Chemicals Ltd., London, England,* Attorney or Agent: Lorimer P. Brooks, et al., Ex. Gp.: 117

4,087,460, Re. S.N. 198,897, Filed Oct. 20, 1980, Cl. 260/574, SUBSTITUTED N-ALKOXY-SUBSTITUTED-2,6-DINITROANILINES AND INTERMEDIATES FOR THE PREPARATION THEREOF, Herchel D. Porter, et al., Owner of Record: *Eli Lilly and Co., Indianapolis, Ind.,* Attorney or Agent: Charles W. Ashbrook, Ex. Gp.: 117

4,092,150, Re. S.N. 176,615, Filed Aug. 8, 1980, Cl. 71/92, HERBICIDAL 5-PYRIMIDINECARBONITRILES, Gino R. Treves, Owner of Record: *FMC Corp., Philadelphia, Pa.,* Attorney or Agent: none, Ex. Gp.: 122

4,121,082, Re. S.N. 206,589, Filed Nov. 13, 1980, Cl. 219/76.16, METHOD AND APPARATUS FOR SHIELDING THE EFFLUENT FROM PLASMA SPRAY GUN ASSEMBLIES, John H. Harrington, et al., Owner of Record: *Metco Inc., Westbury, N.Y.,* Attorney or Agent: S. A. Giarratana, et al., Ex. Gp.: 213

4,129,669, Re. S.N. 210,014, Filed Nov. 24, 1980, Cl. 427/282, METHOD OF APPLYING DECORATIVE DESIGNS TO SURFACES, Martha Z. Lopez, Owner of Record: *Inventor,* Attorney or Agent: Paul D. Flehr, et al., Ex. Gp.: 162

4,141,836, Re. S.N. 212,081, Filed Dec. 1, 1980, Cl. 210/321 A, DIALYSER CARTRIDGE AND METHOD FOR ITS MANUFACTURE, Wilfried Schael,

Owner of Record: Chemisch-Pharmazeutische Industrie KG, Apparatebau Bad Homburg, Germany, Attorney or Agent: W. G. Fasse, et al., Ex. Gp.: 176

4,148,410, Re. S.N. 201,357, Filed Oct. 27, 1980, Cl. 220/269, TAB FOR EASY-OPENING ECOLOGY END, Omar L. Brown, Owner of Record: *Ermal C. Fraze, Dayton, Ohio,* Attorney or Agent: George F. Smyth, et al., Ex. Gp.: 241

4,150,420, Re. S.N. 207,515, Filed Nov. 17, 1980, Cl. 361/401, ELECTRICAL CONNECTOR, William Eugene Berg, Owner of Record: *Tektronix, Inc., Beaverton, Ore.,* Attorney or Agent: Thomas J. Spence, et al., Ex. Gp.: 217

4,178,993, Re. S.N. 195,892, Filed Oct. 10, 1980, Cl. 166/300, METHOD OF STARTING GAS PRODUCTION BY INJECTING NITROGEN-GENERATING LIQUID, Edwin A. Richardson, et al., Owner of Record: *Shell Oil Co., Houston, Tex.,* Attorney or Agent: Harold W. Coryell, et al., Ex. Gp.: 354

4,204,833, Re. S.N. 208,957, Filed Nov. 21, 1980, Cl. 431/22, SAFETY CONTROL FOR FURNACE BURNER, Edward R. Kmetz, et al., Owner of Record: *Scott Vent Dampers, Inc., Hazel Park, Mich.,* Attorney or Agent: John R. Benefiel, Ex. Gp.: 345

4,221,613, Re. S.N. 209,664, Filed Nov. 24, 1980, Cl. 148/103, RARE EARTH-COBALT SYSTEM PERMANENT MAGNETIC ALLOYS AND METHOD OF PREPARING SAME, Nobuo Imaizumi, et al., Owner of Record: *Namiki Precision Jewel Co., Ltd., Tokyo, Japan,* Attorney or Agent: Gerald J. Ferguson, et al., Ex. Gp.: 111

Single Copies of the Trademark Official Gazette

Members of the public ordering single copies of the Trademark Official Gazette from the Superintendent of Documents are reminded they must specify the date of the issue being ordered.

The date of the issue in which a mark will be published for opposition is shown on The Notice of Publication form mailed to applicants approximately two weeks before the publication date. This date must be included on each single copy order.

Orders received without an issue date may be filled from current weekly stock. The Superintendent of Documents cannot check on whether a particular mark is published in the issue then in stock. If the stock is exhausted at the time the order is received, the order will be returned unfilled.

MARGARET M. LAURENCE,
Mar. 3, 1981. *Assistant Commissioner for Trademarks.*

PATENT NOTICES

Certificates of Correction for the Week of Mar. 31, 1981

Re. 30,468	4,224,946	4,231,677	4,237,707
4,079,180	4,225,154	4,231,949	4,237,802
4,096,411	4,225,421	4,232,138	4,237,934
4,096,774	4,225,630	4,232,146	4,238,221
4,128,218	4,225,705	4,232,245	4,238,253
4,155,909	4,225,853	4,232,295	4,238,510
4,178,075	4,225,861	4,233,659	4,238,694
4,188,418	4,226,613	4,233,686	4,238,774
4,193,577	4,226,654	4,233,837	4,238,952
4,197,245	4,227,282	4,233,922	4,239,075
4,202,785	4,227,712	4,234,404	4,239,132
4,206,132	4,227,818	4,234,589	4,239,530
4,208,810	4,228,252	4,234,918	4,239,746
4,210,438	4,228,948	4,235,106	4,239,939
4,215,320	4,229,567	4,235,710	4,240,047
4,215,369	4,229,671	4,235,854	4,240,542
4,217,687	4,229,851	4,235,999	4,240,664
4,218,066	4,229,904	4,236,013	4,241,693
4,220,269	4,230,120	4,236,014	4,241,829
4,220,563	4,230,320	4,236,306	4,242,032
4,220,781	4,230,471	4,236,310	4,242,235
4,223,179	4,230,695	4,236,769	4,243,594
4,224,058	4,231,047	4,236,941	4,245,023
4,224,424	4,231,199	4,237,048	4,245,069
4,224,555	4,231,367		

Disclaimers

4,152,223.—*Francis J. Wallace,* Windsor; *Norman S. Bornstein,* West Hartford and *Michael A. DeCrescente,* Wethersfield, Conn. PLASMA SPRAYED MCIALY COATING AND COATING METHOD. Patent dated May 1, 1979. Disclaimer filed Feb. 17, 1981, by the inventors, the assignees, *United Technologies Corp.,* consenting.

Hereby enters this disclaimer to claims 1, 2 and 6 of said patent.

4,166,978.—*Maynard E. White,* Elkhart, Ind.; *Kenneth E. Monroe* and *Lindsey E. Waldorf,* Ann Arbor, Mich. TWO-WAY VOICE CONTROLLED COMMUNICATION SYSTEM. Patent dated Sept. 4, 1979. Disclaimer filed Jan. 26, 1981, by the assignee, *Maynard E. White.*

The term subsequent to May 1, 1996 has been disclaimed.

Dedication

3,885,414.—*John J. Reville,* Scotia, N.Y. PACKAGE FOR CALIBRATION FLUIDS AND PROCESS. Patent dated May 27, 1975. Dedication filed Oct. 14, 1980, by the assignee, *General Electric Co.*

Hereby dedicates to the Public the remaining term of said patent.

National Technical Information Services

U.S. GOVERNMENT OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE ARMY/OTJAG
Chief, Intellectual Property Division
Room 2D 444, Pentagon
Washington, D.C. 20310

Patent application 6-172,879. Boattail Emergence by Ejecting Nozzle Exit Cone. Filed July 28, 1980.

Patent application 6-168,934. Adjustable Combat Vehicle Armor. Filed July 14, 1980.

Patent application 6-169,590. Method of Fabricating a Ducted Blanket for a Rotor Spar. Filed July 17, 1980.

Patent application 6-170,465. Method of Recharging Fire Extinguisher Bottles. Filed July 21, 1980.

Patent application 6-172,360. Sonic Transducer. Filed July 25, 1980.

Patent application 6-174,293. Satellite Communication System. Filed July 31, 1980.

Patent application 6-177,031. Burst Fire Compensator. Filed Aug. 11, 1980.

Patent application 6-181,317. Fiber Optic, Liquid Crystal Display Electrical Measurement System. Filed Aug. 25, 1980.

Patent application 6-183,604. Mechanical Noise Suppressor for Small Rocket Motors. Filed Sept. 2, 1980.

Patent application 6-183,651. Shaped Charge Warhead Including Shock Wave Forming Surface. Filed Sept. 2, 1980.

U.S. DEPARTMENT OF AGRICULTURE
Program Agreements and Patent Branch
Administrative Service Division Federal Building
Science & Education Administration
Hyattsville, Md. 20782

Patent application 6-187,380. Apparatus for Removing Corn from Cob. Filed Sept. 15, 1980.

Patent application 6-187,382. Direct Extraction Process for the Production of a White Defatted Food-Grade Peanut Flour. Filed Sept. 15, 1980.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health
Chief, Patent Branch
Westwood Building
Bethesda, Md. 20205

Patent application 6-157,380. Blood Gas Analyzer System. Filed June 9, 1980.

Patent application 6–163,952. Intracranial Pressure Monitoring Device. Filed June 30, 1980.

Patent application 6–174,239. Electric Gel Slicer. Filed July 31, 1980.

Patent application 6–186,381. Contrast Resolution Tissue-Equivalent Ultrasound Test Object. Filed Sept. 11, 1980.

Patent application 6–195,188. Mask for the Safe Delivery of Inhalation Gases to Small Laboratory Animals. Filed Oct. 8, 1980.

U.S. DEPARTMENT OF THE NAVY
Director, Navy Patent Program/
Patent Council for the Navy
Office of Naval Research
Code 302
Arlington, Va. 22217

Patent application 6–182,335. Pivotal Mono Wing Cruise Missile with Wing Deployment and Fastener Mechanism. Filed Aug. 29, 1980.

Patent application 6–185,036. Electrohydraulic Control System. Filed Sept. 8, 1980.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters
NASA Code GP-4
Washington, D.C. 20546

Patent application 6–134,855. Toroidal Cell and Battery. Filed Mar. 28, 1980.

Patent application 6–187,106. Collimated Beam Manifold and Method for Using the Same. Filed Sept. 15, 1980.

Patent application 6–188,160. A Fiber Optic Transmission Line Stabilization Apparatus and Method. Filed Sept. 17, 1980.

Patent application 6–191,744. Control Means for a Solid State Crossbar Switch. Filed Sept. 29, 1980.

Patent 4,214,905. Method of Making Bearing Material. Filed Jan. 31, 1977. Patented July 29, 1980. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
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	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
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New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
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	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1224**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF Feb. 21, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-28-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-25-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	10-22-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	1-14-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-17-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—VACANT ..... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-08-79
SPECIAL LAWS ADMINISTRATION, GROUP 220—VACANT ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-05-79
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-14-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	7-09-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-21-78
DESIGN, GROUP 290—C. D. QUARFORTH, Director ..... Industrial Arts; Household, Personal and Fine Arts.	2-12-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-06-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	9-06-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	9-13-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	9-26-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-17-79

Expiration of patents: The patents within the range of numbers indicated below expire during Feb. 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,120,002 to 3,122,748, inclusive

Plant Patents ..... Numbers 2,350 to 2,367, inclusive

REISSUES

MARCH 31, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

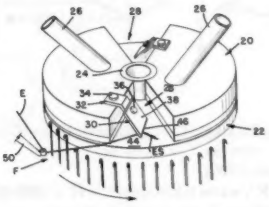
Re. 30,557
YARN BINDER APPARATUS

Roger L. Whittaker, Mocksville, and Clyde Hewitt, Hartsville, both of N.C., assignors to Hanes Corporation, Winston-Salem, N.C.

Original No. 4,130,999, dated Dec. 26, 1978, Ser. No. 803,021, Jun. 3, 1977. Application for reissue May 7, 1979, Ser. No. 37,776

Int. Cl.[3] **D04B** *15/50*

U.S. Cl. 66—145 R **7 Claims**



1. Apparatus in a knitting machine for holding a tensioned elastomeric yarn adjacent a severed end portion comprising; support means including *a dial cap and a dial pad, said dial pad having* a flat surface, *said dial cap having a flat upper surface,* an elongated *yarn* binder element *consisting of an elongated linear member* of spring steel construction having one end fixedly mounted upon said support means and having a displaceable free end portion defining a blade-like edge for normally engaging said flat surface *with slight pressure, said support means including a bracket having angularly disposed integral first and second sections, said first section being in parallel relation to said flat upper surface, fastener means releasably securing said first section to said dial cap with said second section being inclined downwardly with respect to said first section, said second section being positioned at an angle approaching 90° with respect to said flat surface, means securing said binder element to said second section with said second section being in parallel with said elongated linear member,* said binder element being anularly positioned relative to said flat surface such that the free end portion of said binder element is displaceable in a first direction by the elastomeric yarn as the yarn moves in a first path between said binder element and said flat surface, and is displaceable to a second position for wedging and biting into the elastomeric yarn to grip the yarn between said binder element free end and said flat surface due to the retroactive forces in the tensioned elastomeric yarn upon severing of the yarn.

Re. 30,558
INTEGRAL CIGARETTE PAPER HOLDER ELEMENT

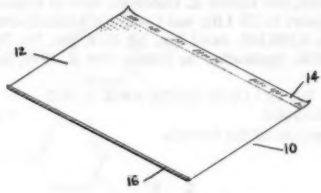
Duane E. Harrington, 365 Crestmont Dr., San Francisco, Calif. 94131

Original No. 4,033,358, dated Jul. 5, 1977, Ser. No. 674,213, Apr. 6, 1976. Application for reissue Sep. 10, 1979, Ser. No. 74,390

Int. Cl.[3] **A24D** *1/08;* **A24F** *9/14*

U.S. Cl. 131—15 R **6 Claims**

1. A cigarette paper with an integral cigarette holder comprising a thin paper material having a substantially noncombustible, thin, elongated *wirelike* support element integrally secured to said paper, said element being longitudinally arranged along the length of a cigarette rolled with said paper, said *wirelike* element being exposed in part on consumption of the cigarette by smoking, wherein said exposed part comprises a holder means for support of the cigarette *and wherein said paper material has a length and a width and said wirelike support*



element is joined to the paper material longitudinally along the length and proximate an edge of the paper material.

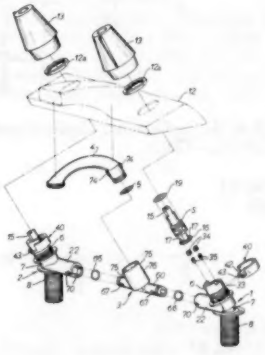
Re. 30,559
NON-RISE FAUCET ASSEMBLY

William C. Schmitt, Milwaukee, Wis., assignor to Milwaukee Faucets, Inc., Milwaukee, Wis.

Original No. 4,064,900, dated Dec. 27, 1977, Ser. No. 735,595, Oct. 26, 1976. Continuation of Ser. No. 929,678, Jul. 31, 1978, abandoned. Application for reissue Sep. 10, 1979, Ser. No. 73,697

Int. Cl.[3] **F16K** *11/20*

U.S. Cl. 137—315 **10 Claims**



1. A non-rise faucet comprising a shank having a lower end through which fluid is introduced and also having an upper end including a stem chamber and communicable with said lower end for the reception of fluid therefrom, an elongated and removable stem slideable into said chamber and having a lower end forming a movable valve in said chamber to permit regulated flow of water through said faucet upon rotation of said stem in said chamber, said upper end of said shank having a slot arranged generally transverse to said elongated stem, said stem having a radial shoulder adjacent its upper end for alignment with said transverse slot, and a removable retainer clip having a portion slideably engaged in said transverse slot, said portion having a recess for embracing and engaging the upper end of said stem when said clip is inserted in said transverse slot, said clip also having a bevelled edge at one side thereof for engagement with said shoulder when said clip is initially inserted in said slot, whereby further engagement of said clip into said slot causes said shoulder and stem to be

pushed downwardly in said shank for operative engagement of said valve, said clip when inserted in said transverse slot preventing longitudinal movement of said elongated stem.

Re. 30,560

OXAZOLIDINEDIONE DERIVATIVES OF VINCA ALKALOIDS

Jean C. Miller, and Gerald E. Gutowski, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

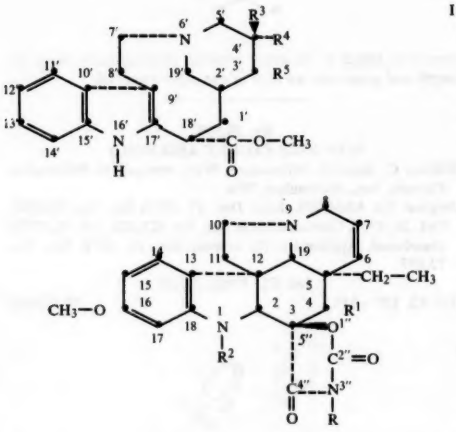
Original No. 4,096,148, dated Jun. 20, 1978, Ser. No. 747,575, Dec. 6, 1976. Application for reissue Nov. 2, 1979, Ser. No. 90,722

Int. Cl.[3] **C07D** *519/04;* **A61K** *31/475*

U.S. Cl. 260—244.4 **7 Claims**

1. A compound of the formula

I

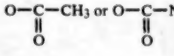


wherein R is H, C_1–C_4 alkyl; C_3–C_4 alkenyl, CH_2—CHX—CH_3 or CH_2—CH_2X;

wherein

X is Br or Cl;

R^1 is OH,



R^2 is H, CH_3 or CHO;

one of R^3 and R^4, when taken singly, is H or OH and the other C_2H_5;

R^5, when taken singly, is H;

and R^4 and R^5, when taken together, form an epoxide; and pharmaceutically-acceptable salts thereof.

Re. 30,561

VINCA ALKALOID INTERMEDIATES

Jean C. Miller, and Gerald E. Gutowski, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

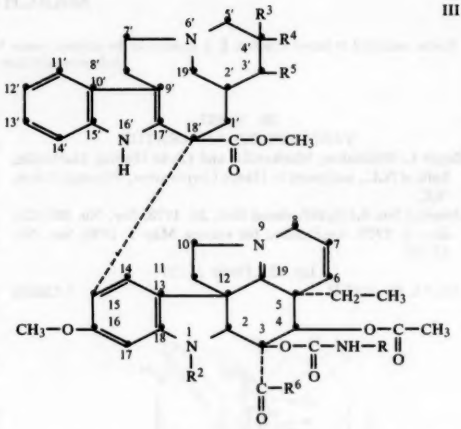
Original No. 4,160,767, dated Jul. 10, 1979, Ser. No. 935,431, Aug. 21, 1972. Division of Ser. No. 869,546, Jan. 16, 1978, abandoned, which is a division of Ser. No. 747,575, Dec. 6, 1976, Pat. No. 4,096,148. Application for reissue Nov. 2, 1979, Ser. No. 90,723

Int. Cl.[3] **C07D** *519/04;* **A61K** *31/475*

U.S. Cl. 260—244.4 **1 Claim**

1. A compound of the formula

III



wherein R is C_1–C_4 alkyl, C_3–C_4 alkenyl, CH_2—CHX—CH_3 or CH_2—CH_2X wherein X is Cl or Br;

R^2 is H, CH_3 or CHO;

one of R^3 and R^4, when taken singly, is H or OH and the the other is ethyl;

R^5, when taken singly, is H;

R^4 and R^5 taken together form an epoxide ring; and

R^6 is OCH_3 or NH_2.

Re. 30,562

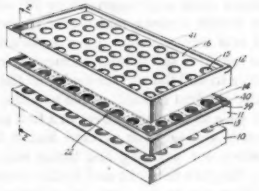
IMMUNOLOGICAL TESTING DEVICES

Hydow Park, 2 Red Hill Rd., Warren, N.J. 07060

Original No. 4,111,754, dated Sep. 5, 1978, Ser. No. 745,541, Nov. 29, 1976. Application for reissue Feb. 22, 1979, Ser. No. 14,174

Int. Cl.[3] **C12M** *1/24, 1/14*

U.S. Cl. 435—296 **7 Claims**



12. An immunological testing device comprising a plastic receptacle structure having upper and lower apertures and a longitudinal through-passage continuous between the upper and lower apertures, said longitudinal through-passage having upper and lower portions, said lower portion having a first predetermined transverse cross-sectional area sufficiently small to retain water by capillary action, and said lower portion of said through passage being defined by inner wall-structures that substantially increase the extent of the circumscribing inner surface of said plastic receptacle structure and make an irregular wall surface for a significant axial extent of said lower portion, while substantially reducing the volume of said lower portion as compared to the volume of the said lower portion without said inner wall-structures, said upper portion of said through-passage having a second predetermined transverse cross-sectional area of a magnitude greater than said first predetermined transverse cross-sectional

area, and said upper portion being in continuous flow relation with said lower portion of said through-passage.

Re. 30,563

PREPARATION OF BENZOYLUREAS

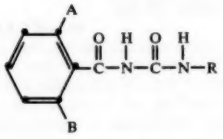
Riaz F. Abdulla, Greenfield, and Norman H. Terando, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Original No. 4,133,956, dated Jan. 9, 1979, Ser. No. 819,639, Jul. 27, 1977. Application for reissue Nov. 2, 1979, Ser. No. 90,807

Int. Cl.[3] **C07D** *241/20, 241/16*

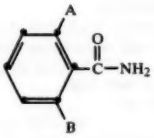
U.S. Cl. 544—336 **20 Claims**

1. A method for the preparation of a benzoylurea having the formula



which comprises

(a) treating a benzamide having the formula



with a C_1–C_7 alkyllithium and a phenyl chloroformate in an inert solvent at about −80° to about −40° C. to form an intermediate urethane; and

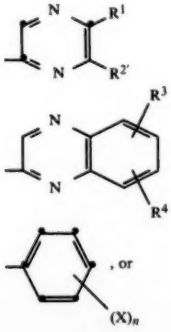
(b) treating the intermediate urethane with an amine having the formula

in an inert solvent at about −80° to about −40° C. and slowly raising the temperature of the mixture and heating at about 50° to about 100° C. to obtain the desired benzoylurea; wherein

A is chloro, fluoro, bromo, methyl or trifluoromethyl;

B is hydrogen, chloro, fluoro, bromo, methyl or trifluoromethyl;

R is



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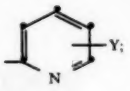
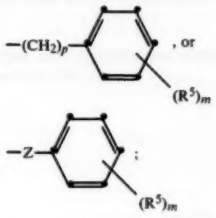


R^1 is hydrogen, halo, C_1–C_6 alkyl, halo(C_1–C_4 alkyl), cyano,



R^2 is hydrogen, halo, methyl, ethyl, cyano or halo(C_1–C_4)alkyl;

R^3 and R^4 are the same or different and are hydrogen, halo, C_1–C_6 alkyl, cyano or halo(C_1–C_4)alkyl;

R^5 is halo, halo(C_1–C_4)alkyl, C_1–C_6 alkyl, cyano or phenyl;

X is halo [or] C_1–C_4 alkyl [;] *or, trifluoromethyl;*

y is halo;

Z is oxygen or sulfur;

n is 0, 1 or 2;

p is 0 or 1; and

m is 0, 1, 2, or 3.

Re. 30,564

SERVO SYSTEMS

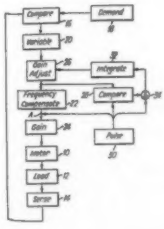
Ian F. Brown, and Colin K. Sharp, both of Edinburgh, Scotland, assignors to Ferranti Limited, Hollinwood, England

Original No. 4,096,425, dated Jun. 20, 1978, Ser. No. 680,779, Apr. 27, 1976. Continuation of Ser. No. 507,420, Sep. 19, 1974, abandoned. Application for reissue Jan. 25, 1979, Ser. No. 6,499

Claims priority, application United Kingdom, Sep. 22, 1973, 44551/73

Int. Cl.[2] **G05B** *13/00*

U.S. Cl. 318—561 **9 Claims**



1. A servo control system comprising a feedback loop including means for supplying an error signal representing the difference between actual and desired conditions of a controlled system, means responsive to the error signal to produce a control signal for said controlled system, means for applying to the feedback loop discrete signals each comprising a first excursion of one polarity providing a disturbance signal and a second excursion of opposite polarity to substantially cancel the effects of the disturbance signal on the system, means for extracting from the loop a loop response signal, comparison means for comparing the disturbance signal and the loop response signal and means responsive to the output of the comparison means to vary the gain in the feedback loop.

PLANT PATENTS

GRANTED MARCH 31, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,678
APPLE ROOTSTOCK TREE

Robert F. Carlson, Okemos, Mich., assignor to Board of Trustees, a Constitutional Corp. operating Michigan State University, East Lansing, Mich.

Filed Nov. 5, 1979, Ser. No. 91,070
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of apple tree referred to by the cultivar name MAC-9 and substantially as herein shown and described characterized particularly by its improved ability to serve as a rootstock for grafting of apple tree cultivars to produce dwarf or semi-dwarf apple trees which are early bearing, have a strong graft and have a well anchored root system without root shoots.

4,679
STRAWBERRY PLANT

Royce S. Bringhurst, Davis, and Victor Voth, Santa Ana, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Nov. 7, 1979, Ser. No. 92,020
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—48 **1 Claim**

1. The new and distinct variety of strawberry plant herein described and illustrated and identified by the characteristics enumerated above.

4,680
MINIATURE ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277

Filed Jan. 28, 1980, Ser. No. 115,743
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded to upright, much branched habit, substantially as illustrated and described, characterized by buds and flowers of a rich deep red color, being of a shade generally near Indian Lake 826/1 or 826/2, the bud and flower resembling the variety Sheri Anne (U.S. Plant Pat. No. 3,826) in form and size; and further characterized by a plant of vigorous and compact growth habit, easy to propagate from cuttings or by budding, with an abundance of small to medium size semi-glossy to matt foliage and an abundance of flowers borne usually in loose clusters of 3 to 5 or more.

PATENTS

GRANTED MAR. 31, 1981

ERRATA

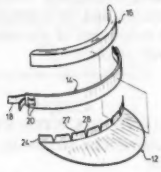
For CLASS	See PATENT NO.
434–202	4,258,477
434–094	4,258,478
434–211	4,258,479
049–049	4,258,502
474–254	4,258,582
411–406	4,258,606
411–417	4,258,607
493–022	4,258,613
440–053	4,258,642
152–209 R	4,258,691
100–295	4,258,766
175–052	4,258,796
177–126	4,258,814
260–029.6 HN	4,259,189
564–137	4,259,259
564–459	4,259,260
564–099	4,259,261
564–491	4,259,262
570–135	4,259,263
570–247	4,259,264
307–262	4,259,686

PATENTS

GRANTED MARCH 31, 1981

GENERAL AND MECHANICAL

4,258,437
EYE SHADE AND METHOD OF PRODUCING EYE SHADES
Henry Sawatsky, R.R. #4, Brampton, Ontario, Canada
Filed Apr. 11, 1979, Ser. No. 29,120
Claims priority, application Canada, Jan. 30, 1979, 320497
Int. Cl.[3] A61F *9/04*
U.S. Cl. 2—12 **9 Claims**



1. An eye shade for wear on the head and formed from flexible plastic material comprising:

a bill member; and

a rim member;

the bill member including a portion having a curved inner edge and which is curved within a plane perpendicular to a first substantially vertical axis and a curved outer edge which extends along a line below said plane;

the bill member having an integrally formed flange portion therefrom, said flange portion comprising a plurality of flange elements spaced apart by V-shaped slots said V-shape slots being present during assembly of the eye shade when the flange portion and the bill member are oriented in the same plane;

said flange portion being delineated from the body of the bill member by a groove forming the line of the curved inner edge;

the rim member having a substantially linear horizontal lower edge that extends substantially within a single plane and being connected to each of said flange elements by spot welding;

a longitudinal strip of perspiration-absorbing material being secured to the shade along the curved edge.

4,258,438
GARMENT FOR DRESSING OUT AND SKINNING ANIMALS
Leatha Kirchner, 28489 Barton, Garden City, Mich. 48135
Filed Apr. 17, 1979, Ser. No. 30,835
Int. Cl.[3] A41D *27/12, 3/08*
U.S. Cl. 2—46 **1 Claim**

1. A disposable protective jacket of waterproof material suitable for wearing over hunting garments, comprising:

a body panel, including a front, a top opening for receiving the neck of the user, and a rear opening extending from the top opening to the bottom of the body panel for receiving the user therein at such time as he is wearing hunting garments;

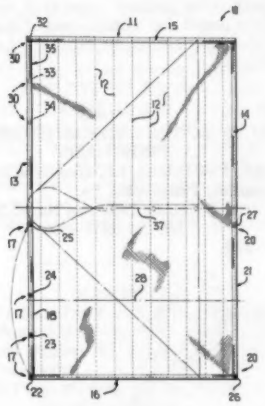
a pair of sleeves of equal length integrally connected to opposite sides of the body panel for receiving the arms of the user;

a glove integrally connected to the lower end of said pair of sleeves, each glove having at least a thumb and two individually movable fingers adjacent said thumb, said two fingers having a length sufficient to receive a hunting knife between the fingers to assist the user in dressing out an animal, said gloves and said sleeves having an overall length such that the lower ends of the gloves substantially correspond to the distance from the top to the bottom edge of the body panel;

a resilient wrist band mounted on each of said sleeves adjacent said gloves for adjusting the position of the sleeve on the user's arm; and

connecting means mounted adjacent the rear opening of the body panel for closing it about the user and his hunting garments.

4,258,439
CONVERTIBLE GARMENT
Judd York, Clover, S.C., assignor to Countess York Limited, Kings Mountain, N.C.
Filed Aug. 27, 1979, Ser. No. 69,916
Int. Cl.[3] A41D *5/00, 3/08*
U.S. Cl. 2—69.5 **19 Claims**



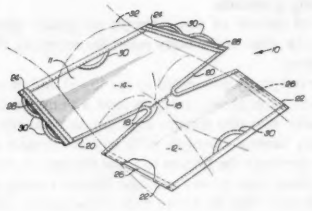
1. A convertible garment capable of being utilized as a cape or a lap robe having a foot pocket comprising a generally polygonally shaped piece of material having first and second opposite generally parallel edges and third and fourth opposite generally parallel edges, cooperative first and second releasable securing means along a first edge portion of said first and second edges, respectively, for forming a foot pocket upon the folding of the piece of material along a line generally parallel to said third and fourth edges, and third releasable securing means along a second edge portion of one of said first and second edges for alternative and selective releasable securement to one of said cooperative first and second releasable securing means for forming a cape upon the folding of said third and fourth edges toward a midline therebetween.

4,258,440

CLOTHES FOR THE PHYSICALLY HANDICAPPED

Malissa McGowan, 1502 E. 126th St., Compton, Calif. 90222

Filed May 19, 1978, Ser. No. 907,740
Int. Cl.[2] A41B *1/10*; A41D *1/06*
U.S. Cl. 2—114 **6 Claims**



1. Garment adapted for wear by a physically handicapped person incapable of executing normal dressing movements;

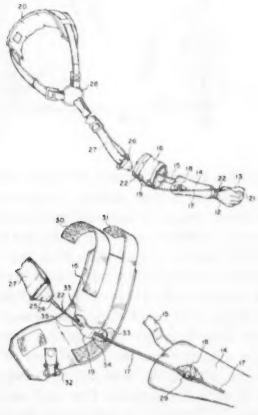
said garment comprising a front panel applicable to the front of the said person's torso, a rear panel applicable to the back of said person's torso, said front and rear panels having opposed side edge margins and distributed fastening means thereon for simultaneously assembling and securing the garment to the wearer's torso by interconnecting said front and rear panels along their opposed edge margins in torso supported relation in the worn condition of the garment, and loops sized to be hand receiving attached to said panels co-distributively with said fastening means along the panel side edge margins in positioning relation to facilitate application of said front and rear panels to the person's torso by hand thrusting throught the loops to manipulate the garment panels into justaposition for garment assembly in wrapped relation about the person and without need of digital grasping of said panels and without the necessity of normal dressing movements.

4,258,441

DUAL OPERATED LATERAL THUMB HAND PROSTHESIS

Judith A. Bell, New Orleans, La., assignor to Hand Rehabilitation Foundation, Philadelphia, Pa.

Filed Aug. 20, 1979, Ser. No. 67,731
Int. Cl.[3] A61F *1/06*
U.S. Cl. 3—12.6 **14 Claims**



1. A hand and lower arm prosthesis for amputees whose amputation stump of the lower arm remains muscularly connected to the upper arm, comprising:

(a) an amputation stump socket and brace means fitting over the amputation stump;

(b) a prosthetic hand movably attached to the amputation stump socket;

(c) a lateral thumb pinch means providing a key grip between the thumb and the hand;

(d) a spring means to provide a continuous closure force on the thumb pinch means holding it against the hand; and

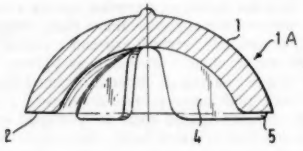
(e) a posterior elbow connection means connecting the thumb, the socket, and the posterior elbow of the amputated arm, said connection means translating force of forearm pronation and/or supination to open the lateral thumb pinch means and of providing purchase sensibility to the posterior elbow.

4,258,442

BREAST PROSTHESIS WITH STIFFENING RIBS

Tertulin Eberl, Konigsdorfer Strasse 35, D-8170 Bad Tolz, Fed. Rep. of Germany

Filed Apr. 18, 1979, Ser. No. 31,199
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1978, 7813097[U]; May 10, 1978, 7814123[U]
Int. Cl.[3] A61F *1/00*
U.S. Cl. 3—36 **4 Claims**



1. A breast prosthesis, comprising,

a cup portion comprised of elastic material comprising a convex outer surface, a concave inner surface, with a center, and an annular rim surface adapted to face the wearer's body,

stiffening ribs radially extending from adjacent the center of said cup portion towards said annular rim surface,

said annular rim surface comprising a plane,

said stiffening ribs terminating at a position slightly removed from said plane, and

said stiffening ribs terminating beyond said plane and outside of said cup portion.

4,258,443

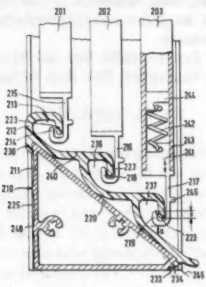
SHIELDING FOR DAMP ROOMS

Heinz G. Baus, Thun, Switzerland, assignor to Showerlux Canada Ltd., Scarborough, Canada

Filed Mar. 13, 1978, Ser. No. 885,565
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1977, 2711826; Sep. 8, 1977, 2740374
Int. Cl.[3] A47K *3/14*
U.S. Cl. 4—557 **5 Claims**

1. Enclosure for wet chambers, particularly for bathrooms or shower rooms, with adjacent slideable partitions which are movably suspended side by side from an upper guide rail, each of the partitions having a lower edge carrying a guide strip which is guided in respective guides on a guide member made up of an elongated box-shaped adapter seatable on the edge of a wet-chamber tub, and a guide rail selectively detachable from the adapter and having a surface descending toward the side of the wet chamber, comprising a stepwise disposition of the guides, the guides having guide walls downwardly extending from respective free edges thereof, each of the guide strips of the respective partitions having an upwardly open channel section with an upwardly directed free extension movable

from below into a position of engagement behind a free edge of the respective guide walls, each of the guide strips being held in the respective partitions vertically displaceably therein



against a tensile spring force and being releasable from the position of engagement thereof behind the free edge of the respective guide wall.

4,258,444

BATH WATER LEVEL CONTROL SYSTEM

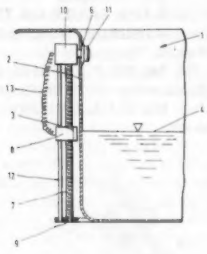
Willy Orszullok, Altena, Fed. Rep. of Germany, assignor to Friedrich Grohe Armaturenfabrik GmbH & Co., Hemer, Fed. Rep. of Germany

Filed May 9, 1979, Ser. No. 37,413

Claims priority, application Fed. Rep. of Germany, May 11, 1978, 2820504

Int. Cl.[3] **A47K** *3/00;* **G01F** *23/26;* **F16K** *21/18*

U.S. Cl. 4—538 **4 Claims**



1. A water level control system for a bath tub comprising:

vertically adjustable detecting means disposed exterior to one wall of said tub for generating a signal when the water in said tub reaches a level at approximately the level of said detecting means;

means for vertically positioning said detecting means, said positioning means including means for holding said detecting means and for translating movement of said level selecting means into a corresponding vertical movement of said detecting means, said holding means comprising a threaded spindle rotatably mounted adjacent said one wall of said tub and a nut supported on said spindle, said nut being nonrotatably connected to said detecting means;

said bathtub including an overflow aperture and a cover rosette;

said system further comprising:

level selecting means comprising a knob movable on said rosette, gearing means coupling said knob to said spindle, means for mounting said spindle to permit rotational movement thereof; and

means responsive to said generated signal for shutting off the inflowing water supply.

4,258,445

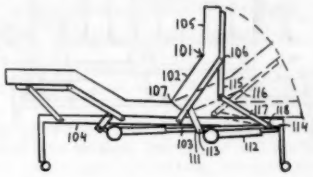
BEDS AND ADJUSTABLE BODY SUPPORTING ASSEMBLIES

Henry C. Zur, 10 W. Griswold Ave., Phoenix, Ariz. 85021

Continuation-in-part of Ser. No. 911,749, Jun. 2, 1978, which is a continuation-in-part of Ser. No. 855,843, Nov. 30, 1977, Pat. No. 4,188,677, which is a continuation-in-part of Ser. No. 705,543, Jul. 15, 1976, Pat. No. 4,127,906. This application Aug. 1, 1979, Ser. No. 41,354

Int. Cl.[3] **A47C** *21/00*

U.S. Cl. 5—66 **19 Claims**



1. A variable body support assembly

composed of pivotally connected supports and distinguished by a single mechanism or power means such as a fluid driven piston in a cylinder serving to move, the leg support member of the assembly both for the adjustment of said leg support in relation to a knee support, and for combined adjusting movements of both said leg support and its connected knee support simultaneously in relation to other portions of the assembly and whereby the adjustable assembly accomplishes with a single mechanism to have the leg support moved by said mechanism from a position wherein the said leg support is pivoting downward from the knee support with the occupants legs downward to the floor, to a elevated position as continuation of the knee support, and wherein a movement by said mechanism elevates said leg support together with the knee support to an upward and slanted position, and wherein a movement of said mechanism causes said leg support to pivot downward together with the knee support until the knee support is restrained from further downward movement by means such as coming to rest on an assembly member, to facilitate positions such as sitting up, and whereby a variety of other positions can be achieved.

4,258,446

INFANT BASSINET AND CRIB ROCKER

Irvin L. McAllister, 2635 Seville Blvd., Apt. 211, Clearwater, Fla. 33520, and Richard F. Wagoner, 845 Hartford Dr., Springfield, Ohio 45503

Filed Sep. 10, 1979, Ser. No. 73,847

Int. Cl.[3] **A47D** *9/02*

U.S. Cl. 5—109 **18 Claims**

1. An infant rocker, comprising:

a track means mounted to a stationary base;

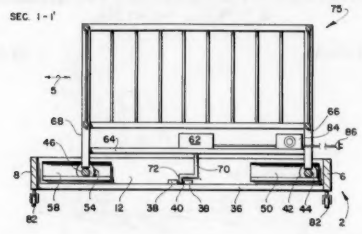
a drive surface mounted to said stationary base, comprising a pair of parallel, horizontal bars having mutually opposed, proximate surfaces forming a slot therebetween;

a glide means mounted to a support beam means, rollably engaging said track means;

a rotary drive means mounted to said support beam means, having a drive shaft oriented vertically with respect to said horizontal bars;

an eccentric rotatably mounted to said rotary drive means, operatively engaging said drive surface, to impart oscillating linear motion of said glide means in said track, comprising a crank having a driven shaft portion which is a vertical extension of said vertical drive shaft and an eccentric portion which is a vertical shaft integrally mounted to

said driven shaft portion and horizontally displaced therefrom, said eccentric shaft projecting vertically into said slot formed between said pair of horizontal bars and being driven against respective ones of said mutually opposed, proximate surfaces thereof, causing said rotary drive means and said support beam means to which said drive



means is mounted, to undergo horizontal, oscillatory displacements;

an infant holding device mounted to said support beam means, undergoing linear oscillatory motion with respect to said base in response to the operation of said drive means.

4,258,447

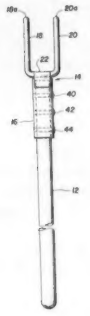
BOW-RAM

Ildefonso Garcia, 318 Lawrence St., Rome, N.Y. 13440

Filed Jan. 2, 1979, Ser. No. 262

Int. Cl.[3] B25D *1/04*

U.S. Cl. 7—146 **3 Claims**



1. A bow-ram member comprising an elongated handle member carrying at one end thereof a forked ram structure, said forked ram structure comprising a pair of elongated side members having upper and lower ends, said side members being joined together at their lower ends by a base striking member, said base member carrying hammer means integral therewith, a sleeve member fitted over one end of said handle member and secured thereto, said ram structure secured to said handle member by said sleeve, said side members fixedly secured to said handle member and immovable relative to said handle member, the longitudinal axes of said handle, said sleeve, and said side members all lying in planes parallel to each other.

4,258,448

METHOD OF DISPERSING, EMULSIFYING MATERIALS WITH PHOSPHORIC ACID ESTERS

Günther Reitz, Cologne; Günther Boehmke, Leverkusen, and Karlhans Jakobs, Berg.-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 13, 1978, Ser. No. 915,019

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1977, 2726854

Int. Cl.[3] C09B *67/42*

U.S. Cl. 8—582 **9 Claims**

1. A method of dispersing organic or inorganic substances in an aqueous medium and of emulsifying organic substances in an aqueous medium comprising incorporating together with said inorganic or organic substances in water, a water-soluble phosphoric acid ester prepared at 80° to 100° C. from a polyol and/or epoxide and a phosphoric acid or a derivative thereof in the molar ratio 1:0.05 to 1.5 or prepared at 120° to 260° C. from a polyol and/or epoxide, a polycarboxylic acid or derivative thereof and a phosphoric acid or a derivative thereof in the molar ratio of 1:≦1.5:0.05–1.5, the sum of the number of mols of the acids being ⅔ to 3/2 of the number of mols of the alcohols, the esters being employed in an amount sufficient to effect dispersion and emulsification.

2. The method of claim 1, wherein the substance to be dispersed is a dyestuff or pigment.

4,258,449

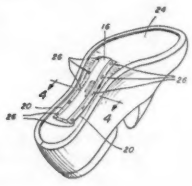
STIFFENER FOR SHOES OR THE LIKE

Robert W. Bradley, Marblehead, Mass., assignor to Bush Universal, Inc., Woburn, Mass.

Division of Ser. No. 765,096, Feb. 3, 1976, Pat. No. 4,133,117. This application Sep. 25, 1978, Ser. No. 945,243

Int. Cl.[3] A43D *31/00*

U.S. Cl. 12—146 S **6 Claims**



1. A method for stiffening the shank region of a shoe insole comprising:

applying a shank strip to a shoe insole, said shank strip including a flexible, moldable matrix of thermosetting resin activatable by a selected external stimulus, said resin being covered with a sheet of material of a character which will transmit said selected external activating stimulus to the resin;

mechanically securing only selected marginal portions of the covering sheet against the surface of the shoe insole to confine the resin between the strip and the shoe insole;

and exposing the shank strip to a selected external activating stimulus while maintaining said confinement of the shank strip to the shape and volume defined by the covering sheet to thereby control the shape of the resultant stiffened shank strip.

4,258,450

APPARATUS FOR BLOWING AND SUCTIONING FIBER FLY FROM TEXTILE MACHINES

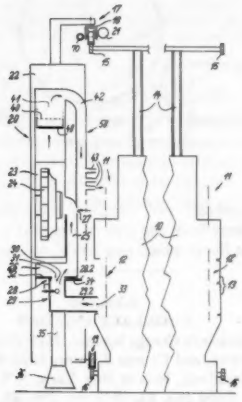
Manfred Sohler, Wangen, Fed. Rep. of Germany, assignor to Hubert Sohler GmbH, Fed. Rep. of Germany

Filed Apr. 5, 1979, Ser. No. 27,206

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1978, 2815188

Int. Cl.[3] B08B 5/00

U.S. Cl. 15—312 A 13 Claims



1. In a textile machine cleaning apparatus for pneumatically blowing and removing particulate matter from at least one elongated textile machine, comprising: an air flow producing fan having on the suction side thereof suction applying means and on the pressure side thereof blowing means, filter means for removing entrained particles from air passed through said fan during most of the operating time and means adapted to alternately and separately detach said particles collected on said filter means therefrom and to convey said detached particles into a collection bin, the improvement which comprises a supporting trackway on either side of said textile machine, said cleaning apparatus adapted to move on said supporting trackway and being driven therealong by drive means, limit switch means actuated by a specific interaction with another machine along the path of movement of said cleaning apparatus to alter the condition of power supply to said drive means, first and second suction applying means for sucking lint from one side of said textile machine and third suction applying means for sucking fiber waste from the floor surrounding said textile machine, said first, second and third suction applying means comprising suction conduits, the suction conduits of said suction applying means being located at least partially below said fan and in fluid connection with said fan to impinge air entrained particles directly against the center of said fan whereby said particles are conveyed to said filter means, which is disposed above said fan and in fluid communication with said blowing means which comprises a vertically spaced array of blowing nozzles communicating therewith whereby an air stream, free of particles, is blown through said blowing means continuously.

4,258,451

SURFACE SWEEPING MACHINE

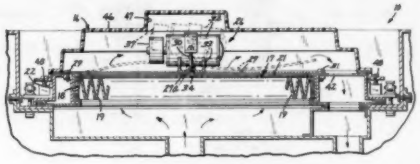
George L. Sommerfeld, Minneapolis, Minn., assignor to Tennant Company, Minneapolis, Minn.

Filed Jul. 23, 1979, Ser. No. 60,012

Int. Cl.[3] A47L 9/20

U.S. Cl. 15—352 16 Claims

1. A sweeper comprising a body structure, a plurality of wheels supporting said body structure, and a rotatable brush carried by said body structure, said body structure including a hopper, a vacuum pump and a dust filter, said hopper serving to store debris picked up by said sweeper, said vacuum pump serving to draw a partial vacuum around said brush, said dust filter being disposed between said vacuum pump and said brush to remove dust particles from said vacuum stream, said dust filter comprising a pleated planar filter medium, support means for said filter medium and a striker mechanism for removing accumulated dust from said filter medium, said striker



mechanism including an elongated flexible member overlying said pleated filter medium, one end of said flexible member being fixed with respect to said body structure and the other end of said flexible member being free to move with respect to said body structure, eccentric drive mechanism attached to said flexible member at a point intermediate said fixed and said free ends whereby said striker mechanism may impart a shock to said filter medium and thereby dislodge said accumulated dust.

4,258,452

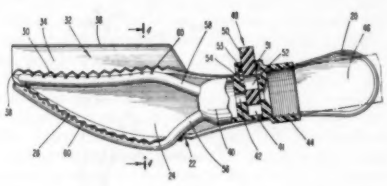
FISH SCALER

Michael R. Adcock, and Charles D. Ditmars, both of 567 Houston St., Mobile, Ala. 36606

Filed Aug. 28, 1979, Ser. No. 70,419

Int. Cl.[3] A22C 25/02

U.S. Cl. 17—51 21 Claims



1. Apparatus for scaling a fish comprising:

first hand-held means for detaching scales from a surface of a fish; and

second means, connected to said first means, for washing the fish with at least one angled jet of liquid, which at least one jet of liquid lifts the scales from the surface of the fish immediately before said scales are detached from the surface of the fish by said first means.

4,258,453

CARD FRAME

Peter Jagst, Mönchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Mönchen-Gladbach, Fed. Rep. of Germany

Filed Jul. 24, 1978, Ser. No. 927,356

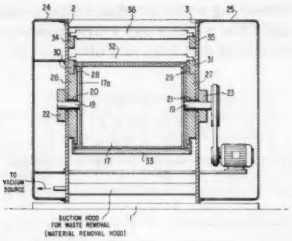
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1977, 2733095

Int. Cl.[3] D01G 15/28

U.S. Cl. 19—98 10 Claims

1. In a card having a frame including two parallel-spaced, rigidly supported side walls having lateral surfaces; a lickerin and a doffer disposed between the side walls and mounted on the lateral surfaces thereof; carding organs having lateral end

faces and situated between the lickerin and the doffer; said carding organs including a main cylinder; the improvement wherein said main cylinder is, with its lateral end faces, disposed immediately adjacent the lateral surface of the respec-



tive side wall and is laterally mounted in said side walls; the improvement further comprising a flange member affixed face-to-face to each side wall between each respective lateral end face to said main cylinder and the respective side wall adjacent thereto.

4,258,454

APPARATUS FOR FEEDING FIBRES TO A CARDING MACHINE

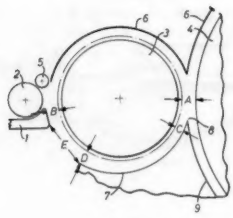
Ian B. Wilson, Barwick-in-Elmet, and William Oxenham, Morley, both of England, assignors to University of Leeds Industrial Services Ltd., Leeds, England

Filed Oct. 9, 1979, Ser. No. 83,031

Claims priority, application United Kingdom, Oct. 19, 1978, 41275/78

Int. Cl.³ D01G *15/40, 15/84*

U.S. Cl. 19—105 **20 Claims**



1. Apparatus for feeding fibres to the carding cylinder of a carding machine, the apparatus comprising a stationary feed plate, a rotatable feed roller and a rotatable takerin for carrying fibres from the feed roller and transferring them to the surface of the carding cylinder, in which the surface of the takerin is furnished with pins at a pin density of not more than 36 pins per square inch and the distance (B) between the feed plate and the envelope of the tips of the pins on the takerin is from 0.03 to 0.75 inch.

4,258,455

METHOD FOR CLASSIFYING FIBERS

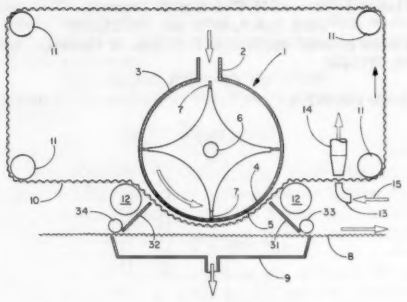
Edward E. Werner, Oshkosh, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 888,659, Mar. 21, 1978, Pat. No. 4,169,699. This application Jan. 18, 1979, Ser. No. 4,597

Int. Cl.³ B29C *13/00*

U.S. Cl. 19—303 **4 Claims**

1. In a process for removing nits, pills, fiber flocs and the like from a dispersion of fibers utilized in the production of a paper sheet, the steps of sifting fibers through a fiber screening member toward a fiber receiving member on which a sheet is to be formed, and rolling up clumps of fibers which pass the screening member to an elongated shape after they exit from the



screening member, and carrying the rolled-up elongated clumps of fibers from the area of the fiber receiving member and from the fibers which pass to the receiving member.

4,258,456

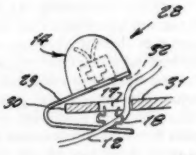
SHOELACE HOLDER

Jay D. Thurston, c/o George Spector, 3615 Woolworth Building, 233 Broadway, and George Spector, 3615 Woolworth Building, 233 Broadway, both of New York, N.Y.

Filed Jun. 13, 1979, Ser. No. 48,136

Int. Cl.³ F16G *11/00;* **A44B** *21/00;* **A43C** *1/00*

U.S. Cl. 24—117 **4 Claims**



1. A shoelace holder, comprising in combination a cap and and anchor, said anchor including a clamp made of spring steel, said cap including a rubber button having a recess in its underside, a tongue molded in said button projecting into said recess for engaging said clamp, so that a shoelace extended across said clamp is secured in said holder, and said anchor being clipped or otherwise fastened to a shoe, wherein said anchor additionally includes a non-spring steel clip of generally U-shaped configuration for fitting around an edge of a shoe flap, said cap being secured at one end of said clip and said clamp being secured at its other end for engagement together after said clamp is inserted through a shoelace hole.

4,258,457

METHOD FOR COATING AND CRIMPING SYNTHETIC THERMOPLASTIC

James K. Hughes, Bartlesville, Okla., and Wayne K. Erickson, Seneca, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 607,972, Aug. 26, 1975, Pat. No. 4,040,155, which is a division of Ser. No. 319,136, Dec. 29, 1972, Pat. No. 3,911,539. This application May 25, 1977, Ser. No. 800,389

Int. Cl.² D02G *1/12*

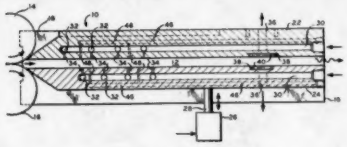
U.S. Cl. 28—221 **18 Claims**

1. A process for producing crimped synthetic thermoplastic fibers, which process comprises:

drawing said fibers;

applying a finishing agent to said drawn fibers; and

crimping said fibers in the presence of steam by passing same under crimping conditions through a crimping zone comprising a defined first region of low but increasing steam



pressure, a defined second region of relatively high steam pressure maintained substantially constant by controlling the rate of introduction of steam into said zone in accordance with said steam pressure in said second region, and a defined third region of decreasing steam pressure.

4,258,458

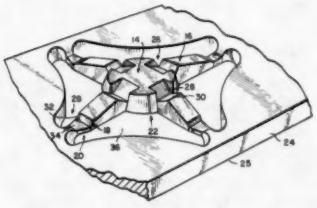
BLANK FOR STONE SETTING

Louis J. Danna, East Greenwich, R.I., assignor to B. B. Greenberg Co., Providence, R.I.

Filed Jan. 14, 1980, Ser. No. 112,073

Int. Cl.[3] B23P *5/00;* **B21D** *7/03;* **A44C** *17/02, 17/04*

U.S. Cl. 29—10 **11 Claims**



1. The method of making a setting for a stone comprising striking from a sheet of malleable metal a blank embodying a base and radially-extending prongs, the blank having a planar bottom side and notches at the upper side at the junction of the prongs with the base and at the distal ends of the prongs, said notches at the junctions defining hinge means connecting the prongs to the base and said notches at the distal ends defining shoulders spaced from the ends and tangs, and with the aid of a punch and die forcing the blank into a die constructed to fold the prongs upwardly at their hinges relative to the base to positions wherein the shoulders collectively define a seat for a stone and the tangs collectively define clinchers for fixing the stone against its seat.

5. A blank for a stone setting comprising a base, prongs extending radially therefrom, said blank having a planar bottom side, depressions in the opposite side at the junctions of the prongs with the base defining hinge means at said junctions, and depressions at the distal ends of the prongs defining seats and clinchers.

4,258,459

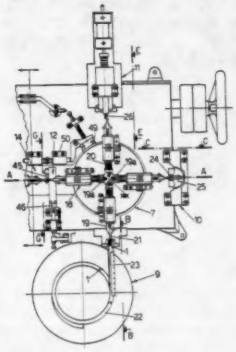
MACHINE FOR AUTOMATICALLY PREPARING AND INTRODUCING CLOSURE SLIDERS INSIDE ANNULAR HOLLOW MEMBERS FOR PRODUCING ANNULAR SPRING SAFETY CATCHES FOR NECKLACES, BRACELETS AND THE LIKE

Alfredo Cantini, Arezzo, Italy, assignor to Gori & Zucchi S.p.A., Italy

Continuation-in-part of Ser. No. 841,339, Oct. 12, 1977, abandoned. This application Mar. 6, 1979, Ser. No. 18,284

Int. Cl.[3] B23P *23/00*

U.S. Cl. 29—33 J **8 Claims**



1. A machine for preparing and introducing arcuated closure sliders inside hollow annular members for producing spring safety catches for necklaces, bracelets and the like characterized by the fact that it consists of two operative unit sets, each comprising a revolving table pivotally mounted for movement about a vertical axis and associated with means to cause said table to rotate at predetermined time intervals through angles of 90° about this axis, each table carrying, around and near its peripheral edge, four sets of support and guiding means, angularly spaced apart from each other and comprising a sliding body carrying a pliers unit and controlled by means for reciprocating the sliding body along a radial path, the pliers including two vertically superposed pliers arms controlled by means for closing and opening the pliers arms according to a predetermined time sequence and during predetermined time intervals for moving the pliers outwards up to project beyond the peripheral edge of the respective revolving table or for returning the pliers in their starting positions, about the first revolving table at each of its stop positions and in the rotation direction thereof being positioned and co-operatively associated: a first unit, including means for ordinately supplying each closure slider in a predetermined disposition; a second unit comprising a device for cutting each closure slider in a predetermined form; a third unit including a device for bevelling the trailing end of each closure; and a fourth unit including devices for pushing the bevelled end of each slider to enter in the inner cavity of a respective annular hollow member provided with a longitudinal slot at its outer side and which is approached by the pliers arms of one of the four pliers sets mounted on the second revolving plate, about which are placed four units, placed in the front of the positions in which the second revolving plate stops, the second unit set comprising; a first unit where an apparatus is provided for supplying one by one in a predetermined disposition one annular hollow member designed to form an annular safety catch; a second unit adjacent and arranged in line with the fourth unit associated with the first revolving table and provided with means for supporting said hollow member during the partial introduction of the closure slider to be introduced therein, passing through the longitudinal slot thereof; a third unit including means for performing a further partial insertion of the closure slides into the

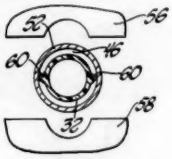
inner annular cavity of the respective annular hollow member; and a fourth unit provided with means for completing the insertion of the closure slider inside the annular hollow member and to discharge the so obtained safety catch which is yet without spring, means being provided for controlling and stopping the various devices and means of the machine, according to predetermined time sequence and correlation.

4,258,460

METHOD OF MAKING A HEAT EXCHANGER

William Melnyk, Lathrup Village, Mich., assignor to McCord Corporation, Detroit, Mich.

Division of Ser. No. 818,434, Jul. 25, 1977, Pat. No. 4,172,946.
This application Feb. 15, 1979, Ser. No. 12,299
Int. Cl.³ B23P *15/26*
U.S. Cl. 29—157.3 B **3 Claims**



1. A method of manufacturing a heat exchanger assembly including solderless tube-to-tube joints comprising the steps of assembling a subassembly including a plurality of fins in parallel stacked relationship for defining heat transfer surfaces and a plurality of fluid-carrying tubes extending transversely through said fins for defining a fluid circuit, said subassembly including at least one tube end requiring connection to the end of another tube, providing a tube end on one of said tubes with an annular outwardly extending shoulder followed by an inwardly tapered portion and at least one outwardly extending projection on said inwardly tapered tube end immediately adjacent said shoulder, providing the tube end of the other of said tubes with an outwardly flared portion having an internal size capable of receiving said inwardly tapered portion, the length of said flared portion being slightly greater than the length of said inwardly tapered portion, assembling said tubes by inserting said inwardly tapered portion into said outwardly flared portion until the end of said outwardly flared portion extends beyond said shoulder and mechanically clinching the end of said outwardly flared portion over said shoulder and forcibly wedging said tapered portion tightly into said flared portion by forming an inwardly extending flange surrounding said projection thereby joining said tubes together to prevent relative rotation between said tubes.

4,258,461

APPARATUS FOR APPLYING BELT FASTENERS TO A BELT

Winston C. Pray, Lombard, Ill., assignor to Flexible Steel Lacing Company, Downers Grove, Ill.

Filed Oct. 5, 1978, Ser. No. 948,971
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—243.5 **41 Claims**

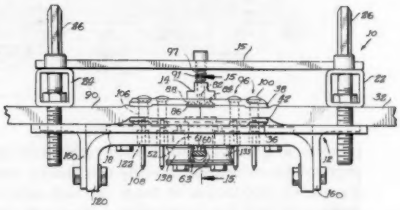
1. An apparatus for fastening two belt ends of a conveyor belt together utilizing upper and lower plate portions disposed above and below the belt ends and having rivet holes, and nail-rivet fasteners driven through the upper plate portions, the belt ends and the lower plate portions, said apparatus comprising:

an anvil means underlying the lower plate portions, for upsetting rivet ends of the nail-rivet fasteners driven through the upper and lower plate portions and the belt;

means associated with the anvil means and the lower plate portions for clamping the lower plate portions in an aligned relationship with the anvil means so that the lower plate portion rivet holes are securely aligned with the anvil upsetting means;

means for securing the belt ends of the belt over the lower plate portions; and

means associated with said anvil means and the upper plate portions for clamping the upper plate portion in an aligned



relationship so that the rivet holes of the upper plate portions are securely aligned with the rivet holes of the lower plate portion and the anvil upsetting means whereby the upper and lower plates, the belt and the anvil means are prevented from becoming misaligned while the nail-rivet fasteners are being driven.

4,258,462

METHOD OF ASSEMBLING THREADED BASE TO A PROJECTILE

Bruce W. Jezek, and Glen L. McClung, both of Baltimore, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 935,182, Aug. 18, 1978, Pat. No. 4,193,328.
This application Aug. 1, 1979, Ser. No. 62,610
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—428 **1 Claim**

1. A method of torquing an externally threaded base member having a smooth counterbore end to an internally threaded projectile housing comprising the steps of:

providing an assembly tool for releasably holding said base member;

rotating a biased locking plate means of said assembly tool to retract a taper locking torquing lug means;

positioning retracted taper locking torquing lug means within said counterbore of said base member;

releasing said biased locking plate means to rotate in a direction which cams said taper locking torquing lug means against said counterbore of said base member;

manually starting the threads of said base member with attached assembly tool;

rotating a lug housing means in a direction which cams a knurled surface of said taper locking torquing means forcibly against counterbore of said base member to complete the threading of said base member to said projectile housing;

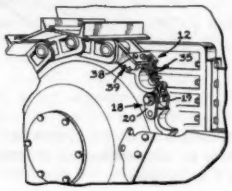
rotating said biased locking plate means in a direction which retracts said taper locking torquing lug means; and

extracting said assembly tool from said base member.

4,258,463
TRACK MOUNTING TOOL AND METHOD

John F. Lindquist, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 5, 1979, Ser. No. 8,984
Int. Cl.³ B23P 19/00; B25B 27/00; B23Q 7/04
U.S. Cl. 29—434 20 Claims



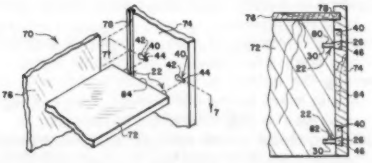
1. A track mounting tool comprising
first attachment means (18) for releasable attachment to a sprocket (10) of a track-type vehicle,
second attachment means (39) for releasable attachment to a track assembly (11) of said vehicle,
adjustable connection means (35) for attachment of first and second ends thereof to said first attachment means (18), and
adjustment means (37) for adjustably connecting said adjustable connection means (35) to said second attachment means (39) between the first and second ends of said adjustable connection means (35).

19. In the method of mounting a disconnected track assembly (11) about a sprocket (10) of a track-type vehicle wherein a tool is attached between said track assembly (11) and said sprocket (10), the sprocket (10) is rotated to dispose ends of said track assembly (11) adjacent to each other, and said ends are connected together, the improvement comprising the step of releasably clamping said tool to either side of said sprocket (10).

4,258,464
METHOD OF FORMING FASTENING SYSTEM

Myron E. Ullman, Jr., Canfield, Ohio, assignor to M.M.G., Inc., Youngstown, Ohio

Division of Ser. No. 806,698, Jun. 15, 1977, abandoned. This application Dec. 18, 1978, Ser. No. 970,390
Int. Cl.³ B23P 19/00
U.S. Cl. 29—526 R 12 Claims

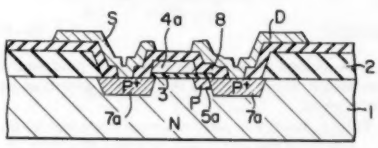


1. A method of forming a connection between first and second structures, comprising the steps of:
(a) providing a pin having a plug formation with portions diminishing in width and perimeter as they extend generally in a given direction away from an end region of the plug formation, a shank extending outwardly of the plug formation on that side of the plug formation opposite the end region, and a flat shoulder at the interface between the plug formation and the shank;
(b) forming a shank-receiving opening in the first structure;
(c) inserting the shank of the pin into the opening in the first structure and continuing insertion until such time as the flat shoulder engages the surface of the first structure in the area surrounding the opening;
(d) forming an elongate slot in the second structure, the slot having an enlarged portion for receiving the plug formation, and a narrower retaining portion for snugly and matingly engaging the plug formation, the retaining portion being undercut and having a substantially uniform cross-sectional configuration along its length, opposite sides of the retaining portion being defined by wall portions which increase in width with slot depth, the depth of the slot being substantially equal to the length of the plug formation from the shoulder to the end region; and
(e) connecting the first and second structures by inserting the plug formation into the enlarged receiving portion and thereafter moving the plug formation into the narrower retaining portion.

4,258,465
METHOD FOR FABRICATION OF OFFSET GATE MIS DEVICE

Tokumasa Yasui; Minoru Fukuda, both of Kodaira, and Tatsumi Shirasu, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 809,106, Jun. 22, 1977, abandoned.
This application May 26, 1978, Ser. No. 909,942
Claims priority, application Japan, Jun. 23, 1976, 51-73174
Int. Cl.³ B01J 17/00
U.S. Cl. 29—571 31 Claims



1. In a method for fabrication of a MIS device comprising forming a gate insulator film and a gate electrode on a first area of the surface of a semiconductor substrate of a first conductivity type and using said gate electrode as a mask to apply impurities of a second conductivity type opposite to said first conductivity type to second and third areas of the semiconductor substrate surface at both the sides of said first area respectively so that source and drain regions are formed therein,
the improvement comprising the step of forming said gate insulator film also on said second and third areas of the semiconductor substrate surface, the step of using said gate electrode as a mask to apply impurities of said second conductivity type with a first impurity concentration to said second and third areas of the semiconductor substrate surface through said gate insulator film, the step of forming a shielding film on a portion of said gate insulator film which is on at least one of said first and second areas of said substrate, said shielding film being adjacent to said gate electrode, the step of using said shielding film and said gate electrode as a mask to remove an unmasked portion of said gate insulator film which is exposed from said shielding film and said gate electrode thereby to selectively expose the surface of said semiconductor substrate, the second step of applying impurities of said second conductivity type with the applying parameters being modified relative to the first applying step so that the impurities applied by said second step will not penetrate through the gate insulator film, thereby to establish a second impurity concentration higher than said first impurity concentration in the exposed surface of said semiconductor substrate, and the step of heating the resultant structure to diffuse said impurities into said semiconductor substrate so that source and drain regions are formed therein, the portion of at least one of said source and drain regions under the portion of said gate insulator film near said gate electrode having a lower impurity concentration

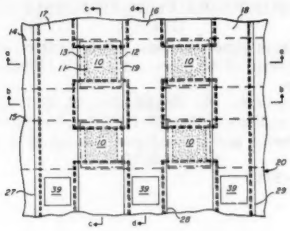
and the other portion of said one region having a higher impurity concentration.

4,258,466

HIGH DENSITY ELECTRICALLY PROGRAMMABLE ROM

Chang-Kiang Kuo, Houston, and Shyh-Chang Tsaur, Stafford, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 2, 1978, Ser. No. 957,518
Int. Cl.³ B01J *17/00*
U.S. Cl. 29—571 **7 Claims**



1. A method of making an electrically programmable semiconductor memory cell of the floating gate type comprising the steps of:

forming heavily-doped source and drain regions on opposite sides of a channel region in a face of a body of semiconductor material, the source and drain regions being elongated and parallel to each other and being covered with a field oxide,

thereafter applying a first layer of conductive material on said face separated from the channel region by thin gate oxide much thinner than said field oxide,

patterning the first layer to define a first set of elongated, parallel strips with each strip positioned between a pair of said source and drain regions and whose side edges define a first pair of opposite edges of a floating gate,

then applying a second layer of conductive material on said face overlying the first layer separated therefrom by a thin insulator coating,

and thereafter patterning the second layer to define a second set of parallel, elongated strips extending perpendicular to said other strips to define control gates and patterning exposed portions of said thin insulator coating and said first set of strips to define a second pair of opposite edges of the floating gate.

4,258,467

METHOD OF MAKING TRANSFORMER

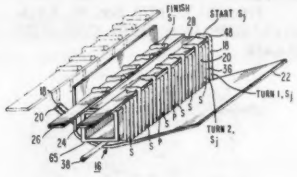
Walter R. Witte, Asbury, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 6, 1979, Ser. No. 63,806
Int. Cl.³ H01F *41/10*
U.S. Cl. 29—605 **6 Claims**

1. A method of forming a closely coupled transformer comprising the steps of:

simultaneously winding M turns of at least two wires about a core to form a cylindrical array of alternating wires,

electrically conductively connecting one of said wires about every T turns to a pair of closely spaced electrically insulated parallel conductors to form N coils of T turns each where M is equal to NT, and then



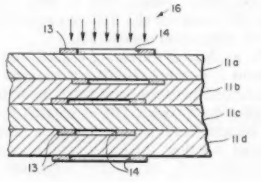
removing a portion of said one wire between the next adjacent connections to said conductors to form N separate coils of about T turns each.

4,258,468

FORMING VIAS THROUGH MULTILAYER CIRCUIT BOARDS

John W. Balde, Flemington, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 14, 1978, Ser. No. 969,621
Int. Cl.³ H05K *3/36*
U.S. Cl. 29—830 **3 Claims**



1. A method of fabricating a circuit board having an electrically conductive circuit pattern on both sides of a dielectric layer, the conductive pattern being formed of a material which is substantially less responsive to being drilled by laser radiation of a predetermined wavelength than is said dielectric layer and having a plurality of leads connected to land areas, the land areas on one side of the layer being aligned with the land areas on the other side of the layer, the method comprising the steps of:

forming an aperture in the land areas to expose the dielectric layer thereunder;

stacking a plurality of such conductively patterned layers alternately with unmetallized dielectric layers;

uniting the stacked layers together to form a multilayer circuit board having one or more groups of aligned land areas each having an aperture therein; and

directing a beam of laser energy of the predetermined wavelength towards at least one exposed land on the outer surface of the stacked layers to drill a via in the substrate through apertures in at leat one aligned group of land areas while exposing at least a portion of at least one of the aligned land areas.

4,258,469

APPARATUS AND METHOD FOR INSTALLING ELECTRICAL CONNECTORS

William R. Salvesen, 577 77th St., Brooklyn, N.Y. 11209

Filed Sep. 10, 1979, Ser. No. 73,783
Int. Cl.³ H01R *43/00*; B23P *23/00*
U.S. Cl. 29—884 **30 Claims**

27. In a method of installing a plurality of electrical contacts in a dielectric body member of a multi-contact electrical con-

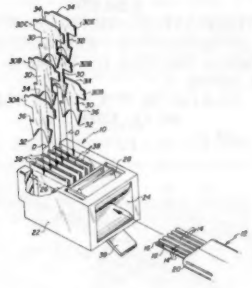
nector wherein adjacent installed contacts are spaced apart a relatively short given distance, the improvement comprising:

receiving and holding the body member within a nest member in position to receive the conductors of the cable at laterally spaced positions corresponding to the side-by-side arrangement of the contacts;

securing the body member to the cable while the body member is held in the nest member; and

inserting the contacts in sequential interlaced groups of simultaneously inserted contacts, with the adjacent contacts of each group spaced apart a distance greater than said given distance during installation, whereby, upon completion of the installation of all of said groups, the spacing between adjacent installed contacts will be the relatively short given distance.

29. In an apparatus for installing a plurality of electrical



contacts in a dielectric body member of a multi-contact electrical connector wherein adjacent installed contacts are spaced apart a relatively short given distance, the improvement comprising:

means for receiving and holding the body member within a nest member in position to receive the conductors of the cable at laterally spaced positions corresponding to the side-by-side arrangement of the contacts;

means for securing the body member to the cable while the body member is held in the nest member; and

means for inserting the contacts in sequential interlaced groups of simultaneously inserted contacts, with the adjacent contacts of each group spaced apart a distance greater than said given distance during installation, whereby, upon completion of the installation of all of said groups, the spacing between adjacent installed contacts will be the relatively short given distance.

4,258,470

SHAVING APPARATUS

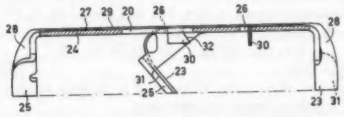
Ebbe Boiten, and Jochem J. de Vries, both of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 28, 1978, Ser. No. 946,885

Claims priority, application Netherlands, Nov. 28, 1977, 7713041

Int. Cl.[3] **B26B** *19/14*

U.S. Cl. 30—43.6 **6 Claims**



1. A shaving apparatus having a circular shear plate provided with hair-entrance apertures and a cutting unit associated with and rotatable relative to the shear plate; said cutting unit comprising a cutting member having a circular central body, cutters extending from the circumference of said central body toward the shear plate, each such cutter having a guide wall, a hair-pulling member having a circular central portion, lead cutters respectively associated with and movable relative to the cutters along their respective guide walls, and elastically deformable substantially V-shaped connecting arms respectively securing said lead cutters to said central portion along its circumference, one limb of each connecting arm being secured at its end to said central portion and extending in a substantially tangential direction from said central portion, the other limb being connected at its end to the associated lead cutter, each connecting arm being sufficiently elastically deformed so as to urge its respective lead cutter against the guide wall of the associated cutter, the force thereby exerted on each lead cutter by such elastic deformation of the connecting arm having a component normal to said guide wall and a component directed along said guide wall in the direction of the shear plate.

4,258,471

RAZOR HANDLE

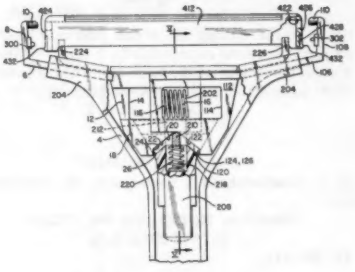
Chester F. Jacobson, Southboro, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jun. 19, 1979, Ser. No. 49,922

The portion of the term of this patent subsequent to Mar. 3, 1998, has been disclaimed.

Int. Cl.[3] **B26B** *21/52*

U.S. Cl. 30—89 **7 Claims**



1. A razor handle for a razor blade assembly adapted to be movably mounted on said handle, said razor handle comprising first and second arm portions, a first journal disposed on said first arm portion, a second journal disposed on said second arm portion, said journals being opposed and aligned, first and second frame portions depending respectively from said first and second arm portions, said frame portions being connected together and slidable each relative to the other to facilitate movement of said arm portions and thereby said first and second journals axially toward and away from each other to permit said journal means to engage and disengage said razor blade assembly, and spring means in engagement with said first and second frame portions, said spring means biasing said arm portions toward each other but permitting movement of said arm portions against the spring bias away from each other.

4,258,472

SHEAR

Edward M. Wallace, Longmeadow; Robert G. Gosselin, Springfield, and Ernest D. Labarre, Holyoke, all of Mass., assignors to Wallace Mfg. Corp., Enfield, Conn.

Filed Sep. 26, 1979, Ser. No. 78,910

Int. Cl.[3] **B26B** *13/00*

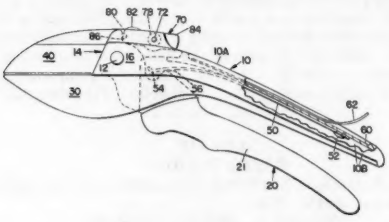
U.S. Cl. 30—262 **6 Claims**

1. A shear comprising:

a cutting blade,

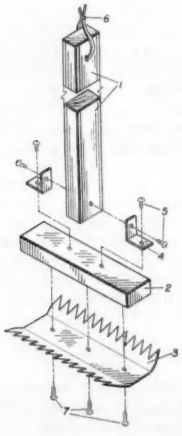
an anvil blade,

a yoke shaped upper handle having cheeks straddling the blades,
a recess in the upper handle for the adhesive securement of an identifying label therein,
a lower handle unitary with the cutting blade,
interengaging means between handles and blades,
spring means normally biasing the blades to opened position comprising a leaf spring concealed within the upper handle and secured at its outer extremity to the upper handle by a rivet extending into the recess and having an inboard extremity for bearing upon the cutting blade,



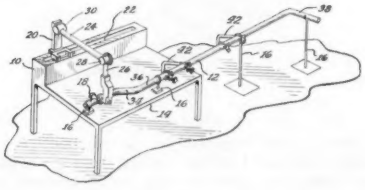
a locking mechanism comprising a latch pivoted centrally of its length between the cheeks of the upper handle with the latch being pivotable between a cutting blade-anvil blade locked position of interengagement with the cutting blade and a cutting blade-anvil blade unlocked position of disengagement with the cutting blade,
the latch having a locking nose engageable with a locking notch in the cutting blade and first and second finger engaging portions engageable by a finger of the user for pivotal movement of the latch and locking nose between blade-locked and blade-unlocked positions.

4,258,473
DANDELION WHIP
Rosella E. Gutekunst, 1312 Porter, Apt. 63, Dearborn, Mich. 48124
Filed Dec. 26, 1978, Ser. No. 972,970
Int. Cl.[3] B26B *3/00*
U.S. Cl. 30—318 **3 Claims**



1. A dandelion cutting tool, for use in removal of dandelion flowers from grass; said tool comprised of an elongated handle member, of rectangular shaped wood for non-sliding grip, a shorter base member attached at the center thereof perpendicularly to one end of the elongated handle member, the handle and base members together forming an inverted T-shaped structure, the underside of the base member being flat; a thin metal blade attached to the underside of the base member, the blade being substantially the same length as the base member, but having a width larger than the base member such that the blade overlaps the base member at each longitudinal side with the overlapped portions being upturned from the edges of the base member toward the handle member at about 5 degrees with respect to the flat underside of the base member, the longitudinal edges of the overlapped portions of the blade each containing an array of sharpened triangular shaped prongs or teeth along the entire length of the blade, the inner ends of the prongs or teeth being spaced a distance of approximately $\frac{1}{8}$ inch from the longitudinal edge on each side of the base member so the dandelion flower is not pushed away from the blade by the wooden base member.

4,258,474
METHOD AND APPARATUS FOR AIDING MEASUREMENT OF PREFORMED TUBES
Frank M. DuMez, Glen Ellyn, Ill., assignor to Teledyne Industries, Inc., Aurora, Ill.
Filed Oct. 22, 1979, Ser. No. 87,582
Int. Cl.[3] G01B *7/28*
U.S. Cl. 33—174 P **6 Claims**

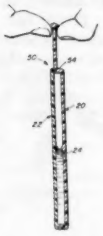


1. A method of measuring preformed tubes with long straight sections using an instrument which spatially locates centerline points, comprising:
attaching each end of a bent tube to the long straight section of a preformed tube, said bent tube having two straight sections defining a bend;
measuring said bent tube as if it were part of the preformed tube;
moving said preformed tube so that unmeasured sections of said preformed tube are within the instrument boundaries but leaving sufficient previously measured spatial reference sections within the instrument boundaries to enable the spatial relation of separately measured sections to be determined;
remeasuring said spatial reference sections;
repeating the above steps with additional attached bent tubes until the unmeasured sections adjacent the long straight section of the preformed tube are within the instrument boundaries; and
measuring said adjacent unmeasured sections.

4,258,475
GOLFER'S SIGHTING DEVICE
Robert D. Buckley, 15 Morrison Rd., Wakefield, Mass. 01881
Continuation-in-part of Ser. No. 911,369, Jun. 1, 1978, abandoned. This application Dec. 14, 1979, Ser. No. 103,707
Int. Cl.[3] G01C *1/00*; A63B *69/36*
U.S. Cl. 33—283 **8 Claims**

6. A sighting device for enhancing a golfer's putting accuracy, said sighting device comprising:
(a) a first shallow part and a second shallow part defining therebetween a hermetic chamber;
(b) a liquid within said hermetic chamber;
(c) said hermetic chamber having a generally rectangular profile;

(d) said first part defining a shallow dish having a flat base portion and peripheral walls;
(e) said second part defining a generally flat base and a peripheral ridge adjacent to the edges thereof;



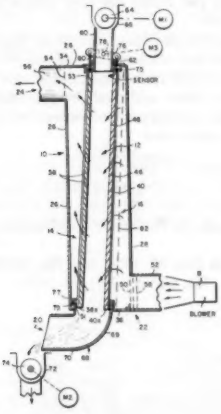
(f) said wall of said first part and said ridge of second part defining shouldered portions that are fused to each other;
(g) at least one of said parts providing an extension defining a transverse pivot portion including a bead that extends outwardly in opposite directions from said extension.

4,258,476

DRYER FOR PARTICULATE MATERIAL

Robert A. Caughey, Antrim, N.H., assignor to Forest Fuels, Inc., Keene, N.H.

Filed Jun. 25, 1979, Ser. No. 51,952
Int. Cl.³ F26B *17/12*
U.S. Cl. 34—174 **4 Claims**



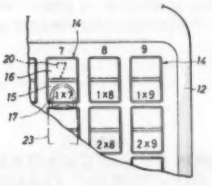
1. A dryer for particulate material comprising means defining an upright, rectangular enclosure of rectangular cross section perpendicular to its length wherein two of the spaced, parallel walls are wider than the other two spaced, parallel walls, the wider spaced, parallel walls constituting the front and back walls of the enclosure and the narrower spaced, parallel walls constituting the side walls of the enclosure, means in the back wall at the lower end defining an inlet opening, means in the front wall at the upper end defining a discharge opening, said inlet and outlet openings being longitudinally-spaced, the longitudinal distance between said openings being approximately three times the distance between the front and back walls, means at the upper and lower ends of the enclosure defining top and bottom openings, spaced baffle plates supported in the enclosure with their ends located in said top and bottom openings, said top and bottom openings being laterally offset with the top opening being closer to the back wall than the front wall and the bottom opening being closer to the front wall than the back wall so that the baffle plates slope rearwardly from the bottom to the top defining within the enclosure a chamber at the rear side of the baffle plates which tapers, becoming progressively narrower as it ascends from the lower end to the upper end and the chamber at the front side of the baffle plate which tapers becoming progressively wider as it ascends from the lower end to the upper end, said baffle plates defining a sloping passage for receiving the material to be dried which is of substantially uniform cross section from top to bottom having spaced, parallel, imperforate side walls defined by the sides of the enclosure and spaced, parallel perforate walls defined by the baffle plates and said baffle plates comprising spaced, parallel louvers providing passages from the chamber at the rear side of the baffle plates to the chamber at the front side of the baffle plates, said louvers being inclined downwardly from their outer sides toward their inner sides, means at the lower ends of the baffle plates and the bottom opening supporting the baffle plates for vertical movement within the enclosure, means connected to the upper ends of the baffle plates operable to oscillate the baffle plates vertically within the enclosure, a distributor plate containing a plurality of uniformly distributed openings therein positioned in the rear chamber and spaced from and parallel to the rear baffle plate, a spark screen in the inlet opening and means for supplying drying air to the inlet opening at a pressure to cause the drying air to flow through from the chamber at the rear side of the baffle plates through the passage defined by the baffle plates into the chamber at the front side of the baffle plates and out through the enclosure at the top opening.

4,258,477

MULTIPLICATION STUDY DEVICE

Shozo Ishiyama, Tokyo, Japan, assignor to Gakken Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1979, Ser. No. 98,241
Claims priority, application Japan, Dec. 14, 1978, 53-172844[U]; Jan. 24, 1979, 54-7953[U]
Int. Cl.³ G09B *3/00*
U.S. Cl. 434—202 **6 Claims**



1. A multiplication study device, comprising:
a case provided with a plurality of holes penetrating therethrough;
a plurality of substantially hollow push-buttons having opened rear sides, each said push-button being adapted to move up and down through a respective one of said holes;
each said push-button having at least a part of the upper surface thereof formed as a substantially semi-transparent see-through surface;
a plurality of projecting members respectively disposed on the rear side of respective ones of said push-buttons for slidably supporting and guiding said push-buttons;
each said projecting member having a multiplication answer marked on that portion of the top surface thereof which faces said see-through surface of said push-buttons;
a resilient member for urging said push-buttons to move upwardly along said projecting members; and
whereby pressing down of said push-button against the force of said resilient member causes the upper surface of said push-button to approach and contact the top of said projecting member such that said multiplication answer

marked on the top of said projecting member appears through said see-through surface of said push-button.

4,258,478

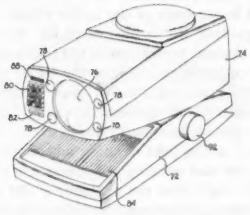
FASHION PREVIEWING SYSTEM

Dale Scott, Glendale, and Roy L. Deets, Woodland Hills, both of Calif., assignors to Magic Mirror, Inc., Studio City, Calif.

Continuation-in-part of Ser. No. 904,237, May 9, 1978, abandoned. This application Apr. 12, 1979, Ser. No. 29,575

Int. Cl.[3] G09B *19/00*; G03B *21/10*

U.S. Cl. 434—94 **13 Claims**



1. A hair color previewing apparatus comprising:

first means for controllably providing any of a plurality of colored hair images superimposed on a facial image of a user, each of said colored hair images having associated therewith a unique color designation; said unique color designation corresponding to the color designation assigned to hair coloring products of corresponding color;

second means for determining a color designation for said user's current hair color; and

third means for converting the current hair color designation and the unique color designation of each colored hair image to the designation of preparations to change hair color from the current color the color of the color image.

4,258,479

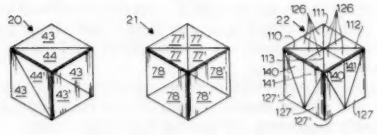
TETRAHEDRON BLOCKS CAPABLE OF ASSEMBLY INTO CUBES AND PYRAMIDS

Patricia A. Roane, 1100 Fulton St. #7, San Francisco, Calif. 94117

Filed Feb. 12, 1979, Ser. No. 11,114

Int. Cl.[3] A63H *33/04*

U.S. Cl. 434—211 **21 Claims**



1. A group of tetrahedron blocks consisting of a series of interrelated sets with every block in every set being a tetrahedron and every face of every tetrahedron being a right triangle, each set being capable of assembly into a cube, the cubes for all sets being identical in size, a first said set consisting of twice as many tetrahedron blocks as a second said set and four times as many tetrahedron blocks as a third said set.

4,258,480

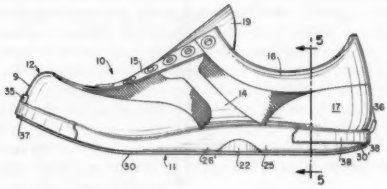
RUNNING SHOE

Joseph P. Famolare, Jr., Putney, Vt., assignor to Famolare, Inc., New York, N.Y.

Filed Aug. 4, 1978, Ser. No. 931,016

Int. Cl.[3] A43B *7/22, 7/14*

U.S. Cl. 36—91 **13 Claims**



1. In a running shoe comprising a unit bottom of elastomeric resilient material, (and) an upper cemented to said bottom, and a full length resilient insole superimposed upon said bottom, the improvement characterized in that

(a) the lowermost, ground-contacting, treading portion of said bottom has a generally oval plantar forepart and a generally oval plantar heel part interconnected by a narrow throat portion;

(b) said throat portion comprising a lateral pad and a medial pad;

(c) each of said pads being offset from the longitudinal center line of said bottom;

(d) said lateral pad being disposed anteriorly within said throat portion;

(e) said medial pad being disposed posteriorly within said throat portion;

(f) the dorsal portions of said bottom of said throat portions forming first and second pairs of valleys bounding said lateral and medial pads respectively and separating said oval heel part from said oval forepart, and

(g) said first and second pairs of valleys being longitudinally offset from each other.

4,258,481

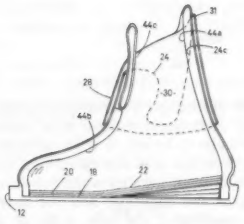
BOOT

Charles C. T. Lamb, 33 Walker Rd., Willowdale, Ontario M2N 2K2, Canada

Filed Jun. 15, 1979, Ser. No. 48,708

Int. Cl.[3] A43B *5/04, 3/26*

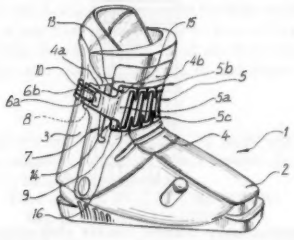
U.S. Cl. 36—120 **6 Claims**



1. A boot comprising: a sole; a vamp, a heel portion which together with the sole and vamp define a space for accommodation of a wearer's foot; an inner upper which is connected to the vamp and heel portion and which extends upwardly above the wearer's ankle to cover the lower areas of the wearer's calf and shin; and an outer upper disposed about said inner upper and having an upper edge which is connected to an upper edge of said inner upper at the rear thereof, said outer upper being otherwise unconnected to said inner upper such that the outer upper may pivot freely about the connection at the upper edge

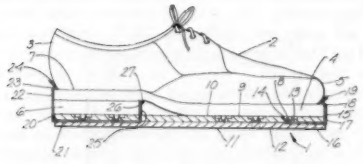
thereof in the forward and rearward direction relative to the inner upper.

4,258,482
SKI BOOT
Georges P. J. Salomon, Annecy, France, assignor to S.A. Etablissements Francois Salomon & Fils, Annecy, France
Filed Feb. 12, 1979, Ser. No. 11,705
Claims priority, application France, Feb. 22, 1978, 78 05097
Int. Cl.³ A43B *5/04, 11/00*
U.S. Cl. 36—121 **26 Claims**



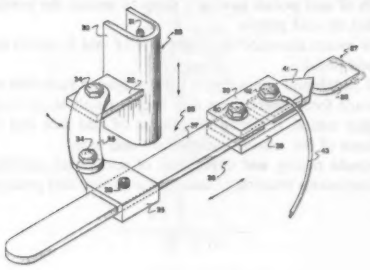
1. A ski boot comprising an upper whose stiffness is adjustable, an adjustable closure element surrounding said upper at least partially at the front portion thereof and in the zone corresponding to the lower leg and means for securing the adjustable closure element on the upper, wherein: the closure element comprises at least one zone of elastic deformation located between the means for securing on the upper, and means for controlling the deformation of said adjustable closure element cooperating with this latter at least on either side of said zone of deformation.

4,258,483
PROTECTIVE DEVICE FOR SPIKED ATHLETIC SHOES
Amos F. Hogue, 3339 Epworth Ave., Cincinnati, Ohio 45211
Filed Mar. 26, 1979, Ser. No. 23,732
Int. Cl.³ A43B *5/00*
U.S. Cl. 36—135 **13 Claims**



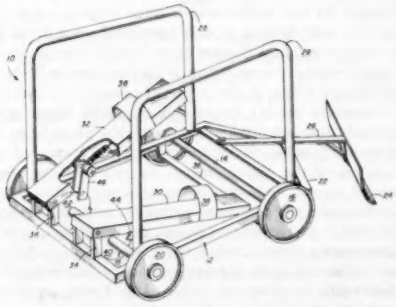
1. A protective device for golf shoes and the like of the type having a plurality of downwardly projecting spikes and an outwardly extending lip-like welt edge, said device comprising a flexible one piece plate-like sole, the upper surface of said sole being configured to abut at least a part of the lower surface of said shoe, the lower surface of said sole being configured to provide reliable footing, a plurality of spike-accepting apertures in said sole, said apertures being arranged and dimensioned to accept said spikes, and means for attaching said sole to said shoe, said attaching means comprising a resilient clip extending upwardly adjacent the toe-abutting end of said sole, said clip including means for gripping said welt comprising an upstanding resilient web terminating at its upper end in a rearwardly directed flange, said web being urged rearwardly against said welt, the lower surface of said flange engaging the upper surface of said welt, said attaching means including gripping means attached to said sole for gripping the heel of the shoe.

4,258,484
IMPLEMENT POSITION INDICATOR
Andre L. Lansard, Box 16, Group 10, R.R. #1, Dugald, Manitoba, Canada
Filed Feb. 5, 1979, Ser. No. 9,165
Claims priority, application Canada, Feb. 10, 1978, 296948
Int. Cl.³ E01H *5/00;* **H01H** *35/14*
U.S. Cl. 37—41 **6 Claims**



1. In an implement which includes a tool and fluid operator means to raise and lower said tool, said implement including a source of electrical energy such as a storage battery; adjustably positioned indicating means on said implement, said means including an electrically operated indicator on said implement, first and second contact means operatively connected between said fluid operator means and said implement, said contact means closing when said tool is at a predetermined position and means operatively connecting said indicator and said first and second contact means with said source of electrical energy, said one contact means being adjustably connected for selected vertical positioning upon said implement, said one contact means including a mounting portion, means for detachably clamping said mounting portion to said implement for vertical adjustment thereto, a contact component secured to said mounting portion and means mounting said contact component for in and out and angular adjustment relative to said mounting portion.

4,258,485
PEDAL PLOW
M. Shamel Gof, 89 Haledon Ave., Paterson, N.J. 07522
Filed Aug. 14, 1979, Ser. No. 66,594
Int. Cl.³ E01H *5/00*
U.S. Cl. 37—41 **3 Claims**



1. A manually propelled pedal driven plow comprising:

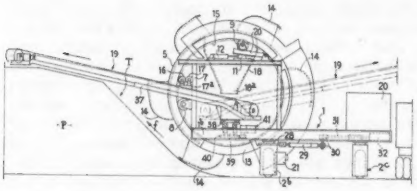
a rectangular frame;
a front axle and a rear axle mounted laterally across said frame towards its front and rear edges;
a pair of wheels mounted on each of said axles for rolling movement of said plow;
a plow blade pivotally mounted to a bar secured to the front end of said frame;
a pair of longitudinally extending spaced apart pedals pivotally mounted on said frame;
a depressed lateral bar to limit the downward movement of the forward ends of said pedals;
each of said pedals having a strap to secure the position of feet on said pedals;
gear means mounted on a rear axle of said frame to engage said pedals;
said pedals and gears means being engaged such that downward force exerted on said pedals result in driving said gear means, resulting in rotation of said axle and movement of the wheels mounted on said axle;
alternate raising and depression of said pedals resulting in continuous rotation of said axle to propel said pedal plow.

4,258,486

SCOOPER-EXCAVATOR

Marcel J. C. Barre, 3 rue de la Mare, 95160 Montmorency, France

Filed Oct. 1, 1979, Ser. No. 80,717
Claims priority, application France, Oct. 4, 1978, 78 28333
Int. Cl.³ E02F *3/24*
U.S. Cl. 37—190 **9 Claims**



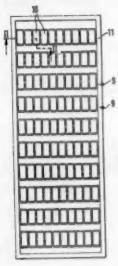
1. A self-propelling scooper-excavator machine comprising a chassis which comprises two branches and has substantially the shape of a U in a horizontal plane of the chassis, a bucket-wheel mounted to be rotatable about a horizontal axis which is fixed relative to said chassis, the bucket-wheel being located at least partly between the branches of the chassis, discharge means mounted on the chassis for discharging the product scooped by the bucket-wheel, three support means for the machine and defining in said horizontal plane three bearing points located at the corners of an isosceles triangle, two of the support means corresponding to the two corners at the base of the triangle being, in the course of operation of the machine, permanently driving means and orientable about respective vertical axes, said driving and orientable means being located on each side of the chassis and respectively associated with the branches of the chassis, means for orienting the respective driving support means and comprising an actuating device and mechanical connections connecting the actuating device to the respective driving support means, the orienting means further comprising a control device which is accessible to the operator and connected to the actuating device for achieving a permanent regulation of the orientation of the driving support means, the angle of orientation of one of the driving support means always being equal to and of opposite direction to that of the other driving support means.

4,258,487

MARKER PLATE STRIP FOR MARKING MULTIPLE TERMINALS

Wolfgang Hohorst, Minden, Fed. Rep. of Germany, assignor to Wago-Kontakttechnik GmbH, Minden, Fed. Rep. of Germany

Filed Jun. 29, 1979, Ser. No. 53,187
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1978, 2829620
Int. Cl.³ A44C *3/00*
U.S. Cl. 40—2 R **9 Claims**



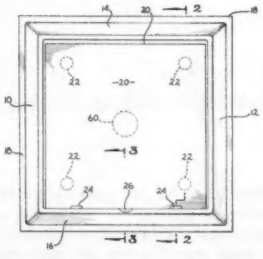
1. A longitudinally oriented marker plate strip including a plurality of side by side disposed individual plates for the marking of individual electrical terminals also disposed together in side-by-side relation and wherein each of said terminals includes a housing in turn having a groove for receiving one of said plates, each of said plates of a relatively planar configuration and having an outer surface adapted for the receipt of marking indicia, said plates having opposed side walls with the side walls of adjacent plates generally equally spaced from each other, adjacent plates being connected to each other by at least one tear-off connecting member which forms a mechanically extensible link such that tensile force applied to adjacent plates in opposite longitudinal directions varies the separation between said adjacent marker plates.

4,258,488

PHONOGRAPH RECORD ALBUM DISPLAY FRAME

Jack D. Schienbein, 12869 Gladstone Ave., Sylmar, Calif. 91342

Filed Sep. 25, 1978, Ser. No. 945,583
Int. Cl.³ G09F *1/12*
U.S. Cl. 40—152 **5 Claims**



1. A frame for displaying a phonograph record album and the like comprising:
(a) substantially parallel upper and lower frame sections secured to substantially parallel left and right frame sections to form a substantially rectangular shaped opening having a length and width at least as great as said album;
(b) a base section coupled to said frame sections and extending in a vertical plane, said base section forming a back panel of said frame;
(c) holding means for holding the bottom edge of said album, said holding means being disposed in said lower frame section at a distance from said base region so that when

said album is resting in said frame the plane of said album forms an angle with the vertical, with the top edge of said album resting against the upper portion of said base region and the bottom edge of said album being held by said holding means;

(d) a raised area disposed in said base region approximately centrally between said left and right frame sections and below the area of said base region where the top edge of the album would rest when it is resting in said frame;

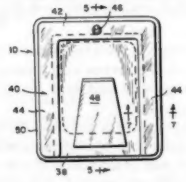
whereby said album is insertable into said frame by placing the bottom edge of said album into said holding means and pushing the top edge of said frame against said base region and is removable from said frame by pushing the bottom edge of said album out of said holding means and to the base region thereby causing the album to contact said raised area and pivot thereabout such that the equilibrium of said album is changed with the result that said album topples out of said frame.

4,258,489

PHOTOGRAPH MOUNT WITH DUAL SUPPORT MEANS

Frederick J. Maguire, Braintree, Mass., assignor to Charles D. Burnes Co., Inc., Boston, Mass.

Filed Jun. 26, 1978, Ser. No. 918,700
Int. Cl.³ A47G *1/06*; G09F *1/12*
U.S. Cl. 40—152.1 **2 Claims**



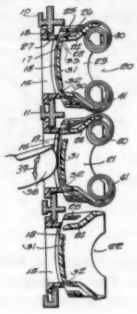
1. A photographic mount comprising a rigid one-piece ceramic frame defining an opening of predetermined configuration, said frame having a front side within which the opening is centered, said opening constituting a window opening extending partway through the frame from the front side and the back side containing a major recess extending partway through from the back side, said major recess having a rearwardly-facing bottom surface situated intermediate the planes of the front and back sides completely bounding the window opening and a side wall surface also completely bounding the window opening which slopes from the back side toward the front side and inwardly toward the window opening, said back side bounding the major recess being substantially planar the major portion of the way around, but containing a minor recess in a portion of its circumference of lesser depth than the major recess which extends from the wall of the major recess in that portion in which the minor recess is situated to the outer edge of the frame and which has a planar surface situated in a plane between the planes of the back side and the rearwardly-facing bottom surface, said major recess being deep enough to receive a window glass, a photograph and a back panel so that the latter is flush with the planar surface of the minor recess and thus constrained from transverse movement therein, but free to be moved longitudinally therein and a U-shaped backboard adhesively secured to the planar back side of the frame having an outer edge coinciding with the outer edge of the back side and an inner edge bounding the major recess except for the portion thereof within which is located the minor recess, said inner edge overlapping the side wall except for the portion within which the minor recess is located and said minor recess providing an opening between its surface and the inner side of the U-shaped backboard for slidably receiving the back panel in the plane of the minor recess and the back side of the photograph situated in the major recess.

4,258,490

PRICE DISPLAY BOARD WITH TAPE PRESSING AND LOCKING MEANS

Charles E. Trame, Mequon, Mich., assignor to Everbrite Electric Company, South Milwaukee, Wis.

Filed Jun. 25, 1979, Ser. No. 51,469
Int. Cl.³ G09F *3/18*
U.S. Cl. 40—518 **3 Claims**



1. A device for displaying characters to compose descriptions such as prices including self-coiling plastic tapes on which the characters are imprinted in sequences extending longitudinally of the respective tapes, said device comprising:

means providing a pair of longitudinally spaced apart edges and a pair of laterally spaced apart edges cooperating to define a window past which a tape may be translated to expose its characters for visualization from the front surface of the tape,

a flange extending along each of the edges of at least one pair of window edges for the front surface of said tape to react against,

a tape support composed of plastic located behind the window and a platen element located behind said window, said platen element being joined integrally with said support and extending in cantilever fashion across a major portion of the window and having an inherent tendency to flex toward the front of said window to thereby press said tape against said flanges.

4,258,491

LOCATION INDICATING DEVICE

Frank J. Ernst, 405 E. 56th St., New York, N.Y. 10022; Milton P. Chernack, 399 June Pl., West Hempstead, N.Y. 11552, and Gordon R. Perry, 1809 Albemarle Rd., Brooklyn, N.Y. 11226

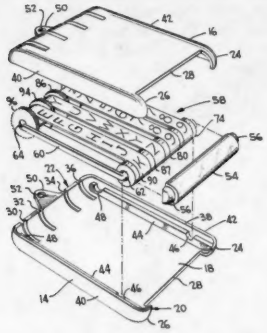
Filed Mar. 30, 1979, Ser. No. 25,715
Int. Cl.³ G09F *11/26*
U.S. Cl. 40—525 **8 Claims**

1. A location indicating device comprising

a housing having a generally flat configuration with a display end along an edge thereof and an opposite operating end having slots therein, the housing being of a relatively small size to be carried on a person;

an adjustable indicator assembly disposed in said housing including a plurality of endless belt indicating strips movable within said housing and carrying indicia for positioning at said display end of said housing for edgewise viewing, a plurality of pulleys rotatably mounted at said operating end of said housing, each of said endless belt indicating strips extending around one of said pulleys, and a plurality of thumb wheels positioned at said operating end of said housing each integrally formed with one of said pulleys to engage and move said endless belt indicating strips, said thumb wheels extending externally of said housing through said slots in said operating end for selec-

tive rotation by a user to position selected indicia at said display end of said housing; and



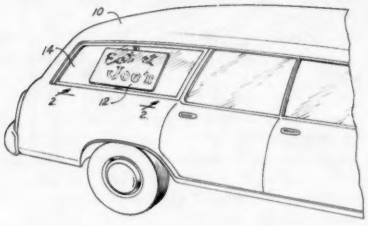
a transparent window disposed at said display end of said housing forming a lens for magnifying images of said indicia carried on said endless belt indicating strips.

4,258,492

SIGN HOLDER FOR VEHICLE

Harry G. Williams, 502 LaPorte Ave., South Bend, Ind. 46628

Filed May 4, 1979, Ser. No. 36,079
Int. Cl.³ G09F *7/20, 21/04*
U.S. Cl. 40—593 **8 Claims**



1. A sign holder for a vehicle window having opposed frame members along the inside of the glass, comprising a sign display panel for mounting on the inside of the window, a fixture connected to the rear side of the panel and having reciprocable shafts extending beyond opposite edges of the panel, a resilient means urging at least one of said shafts toward the respective panel edge, and a shoe disposed at substantially a right angle to the plane of the front of said panel on the outer end of each of said shafts and having a curved, smooth frame engaging surface thereon for seating on the window frame member, said shoe extending forwardly beyond the front surface of the panel for spacing the front surface of said panel from the surface of the window glass.

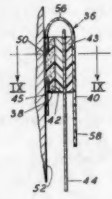
4,258,493

ADVERTISING DISPLAY MEANS AND METHOD

John S. Kettlestrings, Wheaton, and Cecil J. Bailey, Montgomery, both of Ill., assignors to Cling Cal Corporation, Carol Stream, Ill.

Filed May 4, 1979, Ser. No. 36,007
Int. Cl.³ G09F *07/00*
U.S. Cl. 40—600 **8 Claims**

1. An advertising display means comprising:
a display piece, and
a unitary temporary supporting device for supporting said display piece from a generally vertical surface comprising:
a pair of permanent magnet strips being magnetized to attract one another;
a flat flexible backing band having a mounting portion, a hinge portion and a release portion, said pair of magnet strips secured to said backing band in spaced paralled relationship, with a first of said pair of magnet strips carried on said mounting portion and a second of said magnet strips carried on said release portion; and
a pressure sensitive adhesive layer associated with said mounting portion for affixing said supporting device to the vertical surface, said hinge portion of the backing band



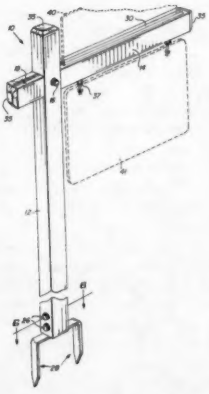
being foldable to position said pair of magnet strips in an aligned facing orientation whereby said display piece is clamped therebetween by magnetic forces for support from said vertical surface,
said temporary supporting device further including a spongy pliable strip interposed between said mounting portion of said flexible backing band and said first of said pari of magnet strips,
whereby the spongy pliable strip is deformable for affixing said adhesive layer to a irregular face of said vertical surface, while allowing the first of said pair of magnet strips to retain a parallel aligned orientation with said second of said pair of magnet strips.

4,258,494

CROSS ARM YARD SIGN SUPPORT

George O. Borque, 665 Jackson Ave., Winter Park, Fla. 32789

Filed Jun. 21, 1979, Ser. No. 50,667
Int. Cl.³ G09F *15/00*
U.S. Cl. 40—607 **6 Claims**



1. A support post for signs and the like comprising:
a vertical post formed from a hollow metal tube having a plurality of vertical internal splines;
a downward projecting spike assembly attached to the lower

end of said vertical post and adapted to be forced into the ground by foot pressure or the like; and

a horizontal crossarm attached to said vertical post near the upper end thereof, said horizontal crossarm formed from a hollow metal tube having a first channel formed in the lower surface thereof and a second channel formed in the upper surface thereof, said first channel adapted to accept sign supporting screws at any selected point along said first channel, said second channel for accepting a pliable insert having a groove therein for accepting the lower edge of an auxiliary sign whereby said sign is held in a vertical position by friction between said sign and said insert;

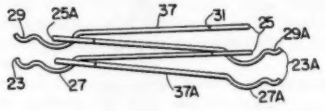
said vertical post having a cutout portion thereof, said cutout portion being cut through at least some of said vertical internal splines, and said horizontal crossarm having a cutout portion thereof adapted to match with and fit into said vertical post cutout, said crossarm cutout portion cut to provide a face of said first channel and a face of said second channel to bear against said vertical post cutout portion, and portions of said upper and lower surfaces arranged to bear against said cut spline surfaces to thereby form a rigid vertical post/horizontal crossarm joint.

4,258,495

INTERACTING SPRINGS

Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20731

Filed Jan. 15, 1979, Ser. No. 3,664
Int. Cl.³ F41C *25/02*; F16F *1/22*
U.S. Cl. 42—50 **28 Claims**



15. In a cartridge magazine in combination: a casing for storing cartridges, said casing including a floor and an exit port; a follower slideable in said casing and adapted for urging said cartridges toward said port; interacting springs engaging said follower and said floor and comprising:

a plurality of resilient members arranged for pivotable engagement in a first compact zigzag relationship in which first relationship said members are relaxed;

said members being moveable inter se while continuing said engagement to a second compact zigzag relationship in which second relationship means on said members are positionally adapted to pivot said members apart thereby causing said plurality to react against said floor and thrust said follower toward said port;

detent means provided on each member positionally adapted to retain said members in said second relationship; and

means for moving said members from said first relationship to said second relationship.

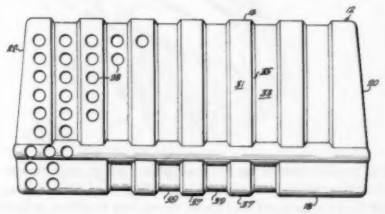
4,258,496

LOBSTER TRAP

Anthony J. Leone, 3301 Raleigh St., Hollywood, Fla. 33021

Filed Sep. 26, 1979, Ser. No. 79,184
Int. Cl.³ A01K *69/08*
U.S. Cl. 43—102 **6 Claims**

1. In combination, a lobster trap comprising a hollow body of relatively rigid molded one-piece plastic construction defining an interior chamber and said body including a top, bottom, end and front and rear walls having a plurality of holes therethrough spaced from one another and providing an openwork molded one-piece plastic trap construction, said end and front and rear walls being provided with a peripheral rigidifying bead adjacent the bottom, said end, front and rear walls converging upwardly to the top from said peripheral bead and extending downwardly to the bottom from said peripheral bead, said wall having spaced raised and lower zones joined together defining a rigidifying pattern in relief, and a lobster trap opening in the walls and means defining converging surfaces for a lobster guide terminating at a mouth in the trap chamber in spaced relation from the top, bottom and walls and through which a lobster is adapted to fall into the trap chamber and said trap having an access opening in the top, said trap including a door and keeper means normally maintaining said door in closing relation of the access opening, said body and said door including mutually interengageable keeper means portions for interconnecting the door and the trap;



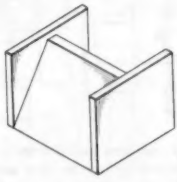
said access door comprising a plurality of interconnected members defining an openwork door sized for spanning said access opening and said mutually interengaging means comprises a downwardly extending skirt on the top of said trap and a plurality of holes aligned with one another on opposite sides of said skirt, said holes being sized to receive projections on said door for sliding movement of the door into and out of a position from which the door may be removed from closing relation of the opening for normal closing relation of the opening.

4,258,497

EDUCATIONAL BUILDING BLOCKS

Donald R. Ellison, 4371 - 25th St., San Francisco, Calif. 94114

Continuation-in-part of Ser. No. 637,330, Dec. 3, 1975, abandoned. This application Jan. 31, 1977, Ser. No. 763,916
Int. Cl.³ A63N *33/08*
U.S. Cl. 46—25 **7 Claims**



1. An educational building block comprising a right prism and two thin, flat, resilient, rectangular plates having widths slightly greater than the altitude of the prism and lengths greater than the greatest altitude of the prism bases, one of said plates being rigidly attached to each base of the prism so that the flat surface of the plates coincides with the prism base and the plates being so oriented that they are in mirror image relationship to each other.

4,258,498

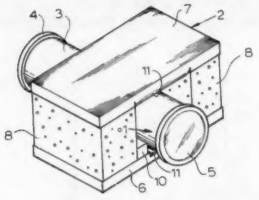
NOISE PRODUCING TOY

John L. Aughey, 134 W. Second St., Hobart, Ind. 46342

Filed Oct. 18, 1979, Ser. No. 86,154
Int. Cl.³ A63H *5/00*
U.S. Cl. 46—178 **10 Claims**

1. A pneumatic noise-producing toy comprising a hollow

cylindrical container having an elongated deformable tubular body member, closed at one end and provided with a removable closure member at the other end, a firing device cooperable with said container, having a pair of spaced jaw members, between which the container may be disposed, for applying compression forces to the intermediate portion of said body member to deform the latter and compress said body member to increase the air pressure therein sufficiently to forcibly disengage the closure member therefrom with the simultaneous production of an explosion-like noise, and means associated with said jaw members for guiding the latter during movement thereof toward and away from one another, wherein said guide means comprises a pair of blocks of resilient material extending between and secured to the respective jaw members, forming guiding means therefor with the inherent resiliency of the blocks being operative to return the jaw members to initial positions spaced apart sufficiently to permit insertion of said container therebetween.



4,258,499

ELECTRICALLY-OPERATED MOBILE MODEL TOY

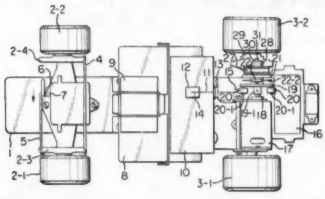
Kenichi Mabuchi, Matsudo, Japan, assignor to Mabuchi Motor Co. Ltd., Tokyo, Japan

Filed Mar. 5, 1979, Ser. No. 17,093

Claims priority, application Japan, Mar. 15, 1978, 53/29737; Mar. 15, 1978, 53/33239[U]

Int. Cl.[3] A63H *33/26*

U.S. Cl. 46—232 **5 Claims**



1. An electrically-operated mobile model toy having a drive motor and a DC power source to feed said drive motor and which is moved by the driving force of the drive motor, wherein a start control device and an imitation sound generator to generate an imitation sound as the drive motor rotates are provided, the start control device being provided between a driving section driven by the drive motor and a driven section and being formed that it can transmit the driving force of the driving section to the driven section when the number of revolutions of the drive motor exceeds a preset level, the imitation sound generator being provided between the drive motor and the start control device, said start control device including two clutch shoes which are provided in said driving section and rotate in response to the driving force of said drive motor and a clutch bell which is provided in said driven section, houses said clutch shoes and is rotatably fitted to the extended shaft of a rotating shaft of said drive motor, said clutch shoes being so formed that they will come in contact with the inner wall of said clutch bell because of the centrifugal force exerted by the rotation of said drive motor and will be linked frictionally to said clutch bell when the number of revolutions of said drive motor reaches said preset level, said imitation sound generator including a striking rod one end of which is flipped by the driving force of said drive motor and the other end of which has a striking face, and a hollow box disposed opposite to said striking face, and is so formed that said striking rod will vibrate to strike said hollow box in response to the number of revolutions of said drive motor, said electrically-operated mobile model toy being an electrically-operated model car with a radio control wherein a receiver, a servo-motor to control the running direction and a speed controller to conrol the running speed are provided and wherein there is further provided an unbalance/balance unit consisting of a clutch base disposed imbalanced with respect to the rotating shaft of said drive motor and a balance weight which is supported on said clutch base by an elastic supporting rod and is movable radially by centrifugal forces, said unbalance/balance unit being adapted to impart vibration to the body of said electrically-operated mobile model toy when said drive motor is running at low speeds and suppress said vibration while said drive motor is running at high speeds.

4,258,500

MOVING TOY

Curry Anderson, P.O. Box 797, Williamson, W. Va. 25661

Filed Aug. 1, 1978, Ser. No. 929,894

Int. Cl.[3] A63H *11/00*

U.S. Cl. 46—264 **2 Claims**

1. A moving toy for climbing an upright surface, said moving toy comprising

a housing;

a miniature motor mounted in the housing;

a drive shaft extending through the housing and extending out of the housing at spaced opposite ends thereof;

coupling means in the housing coupling the motor to the drive shaft;

a pair of crank shafts each coupled to a corresponding end of the drive shaft outside the housing;

a pair of springs each coupled between the housing and a respective arm connected to the free end of a corresponding one of the crank shafts;

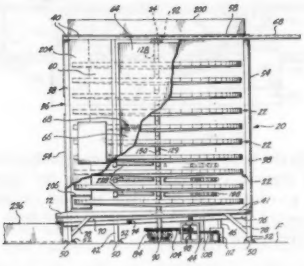
suction cups affixed to the housing; and

a pair of additional suction cups each affixed to the free end of a respective one of said arms, the housing, motor, drive shaft, crank shafts, arms, springs and suction cups being connected and arranged in a manner whereby operation of the motor rotates the drive shaft and moves the crank shafts and arms in predetermined rotary cycles to move the pair of additional suction cups into engagement with an upright surface at predetermined times thereby moving said housing outward from said surface to disengage the housing suction cups from said surface, then moving said housing upward on said surface and back inward toward said surface for re-engagement of said housing suction cups therewith, said springs subsequently moving said pair of additional suction cups off said surface.

4,258,501
SEED SPROUTING APPARATUS AND METHOD

Bruce M. Brown, Seattle, Wash., assignor to Lawrence C. Calvert, II and Richard C. Kiltz, both of Seattle, Wash.

Filed Aug. 15, 1979, Ser. No. 66,651
Int. Cl.[3] A01G *31/02*
U.S. Cl. 47—16 46 Claims

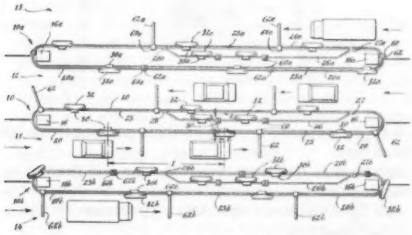


1. A seed sprouting apparatus comprising:
(a) a plurality of rack means arranged about a center;
(b) support means for supporting said rack means in spaced vertical tiers with the centers of each of said tiers of rack means substantially aligned along a vertical axis;
(c) means for rotating said tiers of rack means about said vertical axis;
(d) a plurality of translucent, upwardly open receptacles mountable on each of said rack means, each of said receptacles including liquid passing perforations in at least its lower portions;
(e) an illumination source disposed between said tiers of rack means for directing light onto said receptacles; and
(f) liquid delivery means for selectively directing liquid into each of said receptacles on said rack means while said tiers of rack means rotate about said vertical axis.

4,258,502
MOVING AUTOMATED TOLL COLLECTORS

Napoleon St. Cyr, 10 Overland Dr., Stratford, Conn. 06497

Filed Apr. 16, 1979, Ser. No. 30,131
Int. Cl.[3] E01F *13/00*
U.S. Cl. 49—49 19 Claims

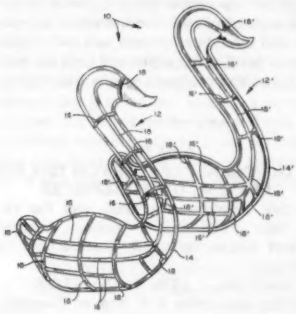


1. Moving automated toll collector apparatus comprising a plurality of automated toll collectors each having a hopper for receiving coins in the amount of a toll; and drive means moving the automated toll collectors at spaced apart intervals in a path parallel to and adjacent a traffic lane in which tolls are to be collected whereby a vehicle entering the traffic lane positions itself adjacent the hopper of one of the automated toll collectors, deposits the toll and departs the traffic lane without having stopped.

4,258,503
THREE DIMENSIONAL TOPIARY FIGURE AND METHOD OF MAKING THE SAME

William T. Bales, 5955 Winslow, Whitehouse, Ohio 43571

Filed Nov. 13, 1978, Ser. No. 951,733
Int. Cl.[3] A41G *1/00*
U.S. Cl. 47—58 1 Claim

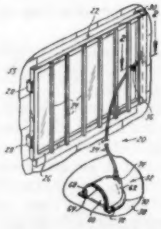


1. A method of forming a three dimensional topiary figure including the steps of:
forming at least a first and second skeletal member of said figure in a predetermined shape;
assembling said skeletal members together;
fastening said skeletal members together to form a three dimensional unitary figure;
disposing a funnel-like structure of a shape compatible within said skeletal members;
placing a medium capable of supporting plant growth through said funnel and into said skeletal member; and
forcing a compatibly shaped compacting element inwardly of said funnel-like structure to cause said medium to be compacted into said skeletal portion.

4,258,504
CABLE RELEASE AND LATCH

Harry H. Hicks, 1599 Knollstone, St. Louis, Mo. 63135

Filed Nov. 2, 1978, Ser. No. 956,915
Int. Cl.[3] E06B *9/02, 3/68*
U.S. Cl. 49—56 8 Claims



1. In a security guard for a window or the like, a keyless latch suitable for repeated opening and closing of said security guard, means to rapidly operate said keyless latch from one side of said guard, said operation means having means to prevent operation of said latch from the opposite side of said guard, means connecting said operation means with said latch, said connection means including an armored cable extending between said latch and said operating means, said armored cable including an inner flexible cable surrounded by an armored housing and means to prevent unauthorized operation through severing said armored cable and manually moving

said flexible cable, said connection means being suitable for installation outside of any supporting walls or structure within which said window or the like is mounted, the operation means including a foot treadle switch, said switch including a platform pivoted about an end thereof, means connecting an end of the flexible cable to an end of said platform opposite said pivoted end, a shield extending around said platform to prevent unauthorized operation thereof, the armored housing ending at and secured to said shield, a spacer surrounding the flexible cable and extending between said end of said armored housing and said platform to adjust and limit the movement of said flexible cable, and means to secure said switch to a support.

4,258,505

METHOD OF AND APPARATUS FOR THE SURFACE CLEANING OF WORKPIECES

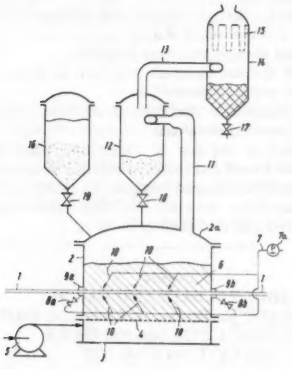
Werner Scheiber, Frankfurt am Main, and Per O. Aalrust, Darmstadt, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 2, 1979, Ser. No. 17,036

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1978, 2809376; Feb. 7, 1979, 2904551

Int. Cl.[3] **B24B** *17/00, 1/00*

U.S. Cl. 51—7 **5 Claims**



1. A process for the surface treatment of a workpiece to effect degreasing, derusting or descaling thereof, which comprises:

(a) disposing the workpiece in a fluidized bed of particles of an abrasive selected from the group which consists of corundum or quartz sand;

(b) fluidizing the bed from below by air; and

(c) while fluidizing the bed and independently thereof, directing against said surface fine gas streams of air at high pressure from nozzles in annular array spaced from the surface of the workpiece and surrounding same whereby the streams upon emergence from said nozzles entrain particles of the bed against said surface.

4,258,506

APPARATUS FOR SCALE AND SLAG REMOVAL

Charles E. Robinson, 208 Gardner Ave., Burlington, Wis. 53105

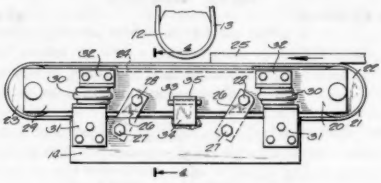
Filed Jan. 15, 1979, Ser. No. 3,159

Int. Cl.[3] **B24B** *7/00, 21/06*

U.S. Cl. 51—76 R **7 Claims**

1. In a machine for surfacing workpieces having surface imperfections difficult to remove, abrasive surfacing means fixed in space with respect to a fixed support, conveyor means including a bed plate under a moving means to carry the workpieces along the bed plate under the surfacing means, the bias means urging the conveyor means toward the surfacing means, the improvement comprising:

the bed plate of the conveyor means being guided on a series of links each having an upper end freely pivoted to a



support for the bed plate and a lower end freely pivoted to the fixed support, each said link having the upper end which is pivoted to the bed plate support inclined upwardly toward the portion of the bed plate from which the workpieces are moving.

4,258,507

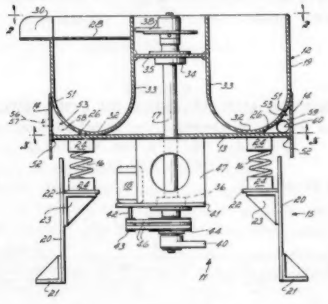
FLUID HEATED ANNULAR VIBRATING FINISHING APPARATUS

Curtis O. Majors, 7918 Winterberry Pl., Cincinnati, Ohio 45241, and Robert L. Majors, 690 Reynard, Cincinnati, Ohio 45231

Filed Aug. 29, 1979, Ser. No. 70,787

Int. Cl.[3] **B24B** *31/00*

U.S. Cl. 51—163.2 **2 Claims**



1. A heated annular vibrating finishing machine comprising:

a fixed base;

a support plate resiliently mounted upon said fixed base;

an annular tub with an outer wall and a curvilinear bottom wall rigidly mounted upon said support plate by means of a fluid-tight seal;

a sleeve surrounding said support plate and annular tub, said sleeve being rigidly joined to the outer wall of said tub in fluid-tight relationship;

a fluid-tight heating chamber defined by said sleeve, said base plate and the curvilinear wall of said annular tub;

said fluid-tight heating chamber being completely sealed from the interior of said tub;

fluid inlet and outlet connections to said heating chamber for recirculating heated fluid through said heating chamber; and

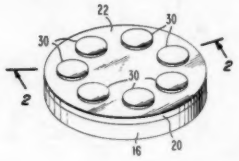
means to impart vibrational motion to said annular tub.

4,258,508

FREE HOLD DOWN OF WAFERS FOR MATERIAL REMOVAL

Wallace Wilson, Wilkes-Barre, and Frank J. Egenski, Plymouth, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 72,430
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—283 R **13 Claims**



1. In the method of polishing wafers comprising mounting wafers on a moistened poromeric pad for retention during free polishing of the wafer, the improvement comprising:

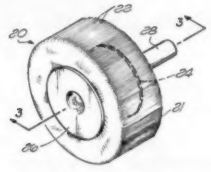
cleaning the side of the wafer which is to contact said mounting pad so that said side is shedding to the liquid with which the pad is moistened and substantially free of adhesion diminishing particles prior to placing said wafer on said mounting pad.

4,258,509

FLAP-TYPE ROTARY ABRASIVE DEVICE

Daniel J. Wray, Tujunga, and Alexis G. Regnier, Los Angeles, both of Calif., assignors to Standard Abrasives, Inc., Northridge, Calif.

Filed May 30, 1978, Ser. No. 910,319
Int. Cl.³ B24D *17/00*
U.S. Cl. 51—334 **3 Claims**



1. An abrasive flap wheel comprising:

a plurality of abrasive leaves of a predetermined size having opposed faces and end edges, each leaf having abrasive particles bonded to at least one face, each of said leaves having opposed side edges, said end edges being parallel to each other and said side edges being parallel to each other, said plurality of leaves being formed into an annular array, having an inner surface formed by the end edges of said leaves facing radially inwardly;

a first end cap centrally disposed about one side of said annular array and having an outer flange, the outer perimeter of the outer flange overlaps and is flush with one side of said side edges, said outer flange of said first end cap being continuous around the outer periphery of the flange and forming a groove facing said side edges, and said first end cap having an inner plug having an inner surface, said plug extending inwardly from said outer flange and forming a central aperture extending from said outer flange to said plug inner surface;

a second end cap centrally disposed about the other side of said annular array and having an outer flange, the outer perimeter of the outer flange of said second end cap overlaps and is flush with the other side of said side edges, said outer flange of said second end cap being continuous around the outer periphery of the flange of said second end cap and forming a groove facing said other side edges, and said second end cap having an inner plug having an inner surface, said plug of said second end cap extending inwardly from said outer flange and forming a central aperture;

said end caps and said inward end edges of said leaves defining a central cavity;

a holding spindle, said spindle being aligned by and rigidly held secured within said first and second end cap central apertures;

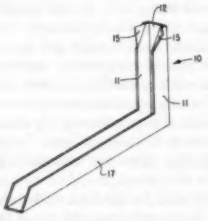
a solidified securing material, said material at least partially filling said cavity and completely filling said first and second end cap grooves and extending between each of the adjacent leaf side edges that abut said end cap grooves, said solidified securing material being the only means for bonding said leaves together and for maintaining the integrity of said flap wheel during rotation thereof while in use.

4,258,510

RAIN WATER DEFLECTOR

Leonard T. Guiana, 1416 S. Minnesota Ave., Sioux Falls, S. Dak. 57105

Filed Oct. 9, 1979, Ser. No. 82,907
Int. Cl.³ E04D *13/00*
U.S. Cl. 52—11 **5 Claims**



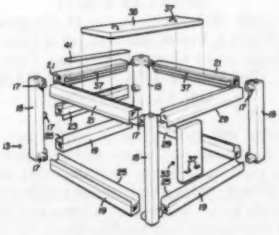
1. Water diverting means for run-off water from a roof having beams comprising deflector means adapted to be attached one end of to one of said beams, said deflector means embracing two opposite sides of said end trough means in communication with said deflector means adapted to receive water from said deflector means and conduct it to a discharge point.

4,258,511

INDUSTRIAL NOISE ABATEMENT ENCLOSURE

William E. Strain, 13345 Merriman Rd., Livonia, Mich. 48519

Filed Mar. 29, 1979, Ser. No. 25,212
Int. Cl.³ E04H *1/00*
U.S. Cl. 52—79.1 **14 Claims**



1. An industrial noise abatement enclosure having opposed

walls comprising an open framework mountable upon a floor surface and a series of elongated acoustical panels of rectangular cross section arranged side by side loosely and removably mounted upon said framework defining the walls and roof of said enclosure;

said framework including a plurality of spaced upright corner posts;

a pair of right angularly related connectors at the top and bottom of each post, with the connectors between an adjacent pair of posts being aligned laterally and longitudinally respectively;

a plurality of pairs of vertically spaced coplaner top and bottom tubes, with one pair of tubes for each wall of said enclosure, with the respective ends of said tubes snugly telescoped over said connectors, respectively for interlock with said corner posts;

an elongated upturned bottom channel having a base mounted on and secured to each bottom tube along its length;

an elongated downturned top channel having a base mounted on and secured to each top tube along its length, with the top and bottom channels for each wall in alignment; said channels defining a lateral opening of a predetermined height;

said panels spanning and at their ends nested and removably interlocked with said top and bottom channels and extending between said corner posts;

the panels defining the roof being arranged side by side, spanning and resting upon said top tubes respectively;

the panels defining said side walls resting upon said bottom channels and being of a height greater than said lateral opening and less than the distance between the bases of said channels so as to loosely nest within the top channels;

each of said panels comprising opposed inner and outer panel faces with inwardly directed opposed side flanges;

said flanges having reversed turned locking edges;

a pair of spaced elongated assembly channel strips between said panel faces inwardly of said flanges;

each strip having inwardly directed opposed lock edges defining an elongated chamber and cooperatively interlocked with said flange lock edges on opposite sides of said panel faces, securing said panel faces together;

an elongated resilient gasket nested within the chamber of each of said assembly channel strips and including an elongated bead projecting outwardly of said strip and along and outwardly of the sides of each panel;

an elongated filler of a mineral material, rectangular in cross section and nested between said panel faces;

said panel face being perforated;

and top and bottom channels overlying the ends of said panel faces;

said wall panels being individually liftable within the corresponding top channel to facilitate outward removal of the lower ends of each panel from the corresponding bottom channel.

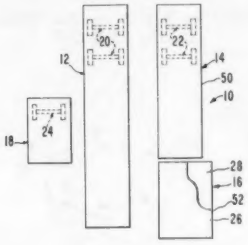
4,258,512

HOUSING UNIT FORMED FROM MOBILE OR MODULAR PARTS

Charles W. Delk, Walnut Creek; Lee H. Brandenburg, Woodside, and Edwin J. Parish, San Jose, all of Calif., assignors to The Immobile Home Company, San Jose, Calif.

Filed May 23, 1978, Ser. No. 908,619
Int. Cl.[3] E04H *1/00*
U.S. Cl. 52—79.7 **7 Claims**

1. A housing unit comprising: at least a pair of elongated home parts, each home part having a pair of opposed sides, one of the home parts being longer than the other home part, the home parts initially being transportable independently of each other onto a lot; means beneath each home part for supporting the same in side-by-side relationship on the lot with a side of one home part being directly adjacent to a side of the other home part; means interconnecting the adjacent sides of the home parts when the same are supported by said supporting means; and a garage adjacent to the home parts and in longitudinal alignment with the other home part, said garage having a floor slab, a pair of sidewalls and an end wall, the sidewalls and end wall being independent of the home parts and being supported on the floor slab, said garage having means coupled to the home parts for permitting the home parts to move up and down and the garage sidewalls and end wall to remain stationary on the floor slab as the lot heaves and subsides due to earth movement.

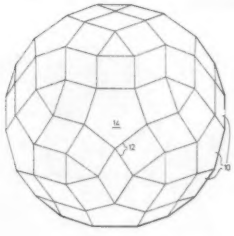


4,258,513

SPACE ENCLOSING STRUCTURE

Helmut Bergman, 116 Newport Ave., Scarborough, Ontario, Canada (M1L 1J5)

Filed Aug. 8, 1979, Ser. No. 64,756
Int. Cl.[3] E04B *1/32*
U.S. Cl. 52—81 **12 Claims**



1. A space enclosing structure having an outer edge comprising a dome-like portion of a structure comprising:

(a) a plurality of elements;

(b) the elements being oriented in a relationship to each other so that the elements contact each other defining a plurality of planar shapes, or a shape comprising a non-planar combination of at least two of the said planar shapes, wherein each of the planar shapes is equivalent to each other same shaped planar shapes, each of said planar shapes being one of a regular pentagon, an equilateral triangle, a right angled parallelogram or a rhombus;

(c) the arrangement of the planar shapes being such that each planar shape other than a right angled parallelogram planar shape is abutted on each side by a right angled parallelogram planar shape, no right angled parallelogram planar shapes abut on a side with any other right angled parallelogram planar shape;

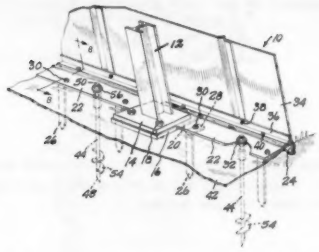
(d) each one of all the acute vertices of each rhombic planar shape abuts a vertice of a pentagon planar shape;

(e) each obtuse vertice of each rhombic planar shape abuts a triangle planar shape vertice.

4,258,514
METHOD AND MEANS FOR ANCHORING A DISMOUNTABLE BUILDING

Alfred L. St. Clair, 1103 Monroe St., Rochester, Ind. 46975

Filed Jan. 30, 1979, Ser. No. 7,719
Int. Cl.[3] E04B *1/32*
U.S. Cl. 52—86 7 Claims



1. Means for anchoring a dismountable building having a plurality of spaced main frame members including base plates, comprising

a flexible sheet spread upon the ground at a building site,

perimeter plates bearing on the sheet at the marginal portions thereof and having a plurality of spaced apertures therein,

said plates including downwardly projecting spikes piercing said sheet and the ground spaced from said apertures,

a plurality of elongated auger type anchors driven into the ground with their upper ends projecting through said sheet and each extending through an aperture of a perimeter plate,

retainers releasably carried by said anchors, and engaging said perimeter plates, and

means for releasably securing each frame base plate to a perimeter plate.

4,258,515
CONDUIT TRUNKING

William J. Owen, Park Pl., Beaufort, Ebbw Vale, Gwent, Great Britain

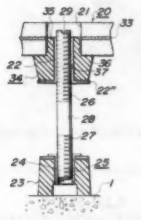
Filed Sep. 13, 1978, Ser. No. 942,897
Claims priority, application United Kingdom, Sep. 13, 1977, 38078/77
Int. Cl.[3] E04F *19/02;* H02G *3/26*
U.S. Cl. 52—105 8 Claims

1. Trunking to receive and conceal elongated members on an exposed surface, comprising an elongated base provided with means for attachment to said exposed surface, the base having means for retaining said members temporarily in position thereon, and a transparent cover provided with means for securing a strip of material within said cover to be visible externally, and means for securing said cover as a releasable snap fit to said base so as to form an enclosed elongated duct, the outer flank surfaces of said cover being inclined towards and substantially meeting said exposed mounting surface.

4,258,516
APPARATUS FOR SUPPORTING FLOOR PLATES ABOVE SUBSTRATE

Osamu Mori, Yokohama; Takanao Yoshizawa, Chigasaki, and Kozo Samata, Yokohama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Apr. 11, 1979, Ser. No. 28,945
Claims priority, application Japan, Jun. 16, 1978, 53-72779; Oct. 16, 1978, 53-140777[U]; Dec. 12, 1978, 53-152668; Jan. 30, 1979, 54-10323[U]
Int. Cl.[3] E02D *27/34*
U.S. Cl. 52—126 1 Claim



1. An apparatus for supporting floor plates above a substrate, comprising: a flat square floor plate provided at least at each corner thereof with a hole, an upper female screw threaded sleeve fitted in said hole of said floor plate, a cylindrical rubber-like elastic body having a center hole and disposed on the substrate, a lower female screw threaded sleeve fitted in said center hole of said cylindrical rubber-like elastic body and having threads oppositely handed to those of said upper female screw threaded sleeve, a supporting rod composed of a screw threaded rod provided at its upper and lower portions with right-handed and left-handed screw threads and at its upper end with a slot adapted to be engaged with and rotated by a driving tool, said right-handed and left-handed screw threads of said threaded rod being threadedly engaged with said upper and lower female screw threads of said upper and lower female screw threaded sleeves, respectively, and

an annular rubber-like elastic body composed of an upper reduced diameter portion and a lower enlarged diameter portion and having a center bore extending through said upper and lower portions, said upper female screw threaded sleeve being fitted in said center bore of said elastic body.

4,258,517
FRAMING STRUCTURE FOR A FLEXIBLE PANE

Leonard A. Hammond, 12660 SE. 122nd, Portland, Oreg. 97266

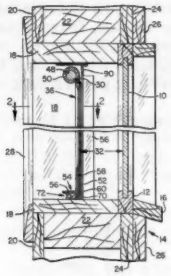
Filed Aug. 15, 1978, Ser. No. 933,875
Int. Cl.[3] E06B *3/28*
U.S. Cl. 52—202 16 Claims

1. A window assembly for an opening defined by a frame, comprising:

a one-piece flexible pane having two side boundary portions parallel to each other and two end boundary portions, the pane being made of plastic membrane material; and

two elongated semirigid edge channel members of uniform cross section which are mounted parallel to one another on opposite edges of the frame to receive the side boundary portions of the pane, each of the channel members having a substantially flat base portion terminating at a first free edge that extends toward the opposite channel member and an arch portion terminating at a second free edge and extending from the base portion toward the first free edge so that a space is defined between the base and arch portions, said base and arch portions being spaced a progressively decreasing distance apart in the direction of the free edges, the free edges abutting one another exerting compressive gripping forces at directly opposite loca-

tions on the faces of side boundary portions inserted between the free edges so that the free edges grip the side



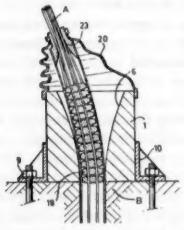
boundary portions without exerting torquing forces thereagainst.

4,258,518

POSSIBLY REMOVABLE DEVICE FOR GUIDING THE DEFLECTION OF STRETCHED CABLES

M. Pierre Xercavins, Quille, France, assignor to Freyssinet International, France

Filed Dec. 29, 1978, Ser. No. 974,542
Claims priority, application France, Dec. 30, 1977, 77 39870
Int. Cl.³ E04C *5/12*
U.S. Cl. 52—223 L **12 Claims**



1. Deflection guiding arrangement in a solid mass for a flexible cable made of a plurality of strands and issuing from said mass substantially perpendicularly thereto through a trumpet flared cavity in axial relationship therewith, said cable being submitted to a pull of variable direction on either sides of the axis of said cavity, said arrangement comprising a stack of substantially similar rigid circular members axially threaded by said cable, said members being adapted for angular relative displacement of each pair of their adjacent faces and for tangential contact of their peripheries with the wall of said cavity whereby deflection of the cable, being guided by the said wall, the cross-sections of the cable in the said cavity are kept by said stack.

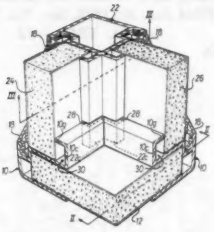
4,258,519

MEANS FOR JOINING PANELS

Andrew Hugens, 1 Avenues Ct. Victoria Ave., Hull, England

Filed Mar. 19, 1979, Ser. No. 22,037
Int. Cl.³ E04B *1/38*
U.S. Cl. 52—282 **17 Claims**

1. An assembly for joining panels comprising at least two gripping arrangements, each gripping arrangement having first and second panel receiving means and being formed in part by an elongate extruded member, at least one of said panel receiving means being defined between a flange of said elongate extruded member and an elongate gripping member which is adapted to be received and retained in a first longitudinal groove in said elongate extruded member, a flange of one gripping arrangement having a slot which receives a portion of



the flange of at least one other gripping arrangement whereby said gripping arrangements are interengageable at predetermined angles relative to one another.

4,258,520

MULTIPLE PANEL BUILDING CLOSURE

Erwin G. Rehbein, Waupaca, Wis., assignor to Mill-Craft Housing Corporation, Waupaca, Wis.

Continuation-in-part of Ser. No. 949,149, Oct. 6, 1978, abandoned, which is a continuation-in-part of Ser. No. 819,762, Jul. 28, 1977, abandoned. This application Oct. 19, 1979, Ser. No. 86,596
Int. Cl.³ E04D *1/20*; E04C *1/10*
U.S. Cl. 52—522 **5 Claims**

1. A multiple panel building closure, comprising an integral wall member constructed of pultruded reinforced resin panels having accurately formed mating edges, double-mortise joints interlocking said panels together uniformly along their co-extensive mating edges, a fastening flange disposed on each panel for securing the panel to a building element, and a sealant embedding the tenons of said joints, to thereby provide a self-supporting hermetically sealed closure member generally co-extensive with a side or roof section of a building.

4,258,521

METAL FOIL INSULATION, ESPECIALLY FOR NUCLEAR REACTOR INSTALLATIONS

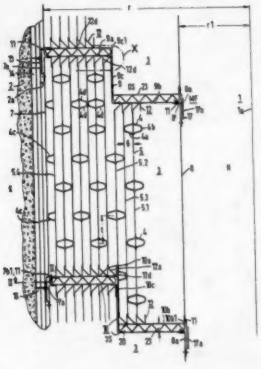
Peter Fricker, Freinsheim; Kuno Leyendecker, Neustadt; Jürgen Scharl, Ludwigshafen; Helmut Wagner, Heddesheim; Horst Wunsch, Heidelberg, and Manfred Scholz, Erlangen, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim(Ruhr and Grunzweig & Hartmann und Glasfaser AG, Ludwigshafen, both of, Fed. Rep. of Germany

Filed Jun. 28, 1978, Ser. No. 919,780

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1977, 2729453; Jul. 29, 1977, 2734348

Int. Cl.[2] F16L *59/08*

U.S. Cl. 52—406 **18 Claims**



1. Metal-foil insulation formed of a multiplicity of substantially rectangular-shaped, air-enclosing metal foils disposed laterally adjacent and above one another and provided with spacers therebetween, the metal foils being packageable in thermally displaceable relationship into panels with connecting means for maintaining the foils in packaged condition, the panels, in turn, being mutually alignable with sealable joints in a plurality of coordinate directions, comprising bends formed in marginal zones of at least one side of an upper and a lower side of the metal foils in the respective panels, said bends having a shape and a shape elasticity such as to be deformable by a packaging force to a spacing between mutually adjacent metal foils determined by the spacers therebetween, the metal foils packaged into the respective panels being disposed with said bends thereof substantially linearly and sealingly engaging one another, the panels being formed as cassettes closed at one side at least of an upper and a lower side thereof by at least one sheet of a cover and a bottom sheet, said cassettes being open at the sides thereof, said bends of the metal foils being disposed on at least one side of a cover and a bottom side thereof and, in packaged condition of said cassettes, being movable into engagement linearly and sealingly with inner sides of said at least one sheet of said cover and said bottom sheets.

4,258,522

CONSTRUCTION BLOCKS

Jose A. Amaral, 3635 Stichman Ave., Baldwin Park, Calif. 91706

Filed May 18, 1979, Ser. No. 40,299

Int. Cl.[3] E04C *1/10*

U.S. Cl. 52—591 **12 Claims**

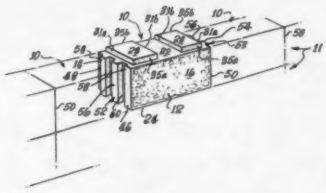
1. A construction block having:

a top;

a bottom;

first and second side walls having outer and inner wall surfaces; and

first and second ends, at least said first end having an end surface which extends from said first side wall outer surface to said second side wall outer surface and which includes in order from said first side wall outer surface to said second side wall outer surface, a first end surface portion, a second end surface portion perpendicular to said first end surface portion, a third end surface portion perpendicular to said second end surface portion and closer to said second end than said first end surface portion, a fourth end surface portion perpendicular to said first and third end surface portions, a fifth end surface portion perpendicular to said second and fourth end surface portions and further from said second end than said first end surface portion, a sixth end surface portion perpendicular to said first, third and fifth end surface portions, a seventh end surface portion perpendicular to said second, fourth and sixth end surface portions and closer to said second end than said first end surface portion, an eighth end surface portion perpendicular to said first, third, fifth and seventh end surface portions, a ninth end surface portion perpendicular to said second, fourth, sixth and eighth end surface portions and further from said second end than said first end surface portion, a tenth end surface portion perpendicular to said first, third, fifth, seventh and ninth end surface portions, and an eleventh end surface portion perpendicular to said second, fourth, sixth, eighth and tenth end surface portions and in planar alignment with said first end surface portion.



4,258,523

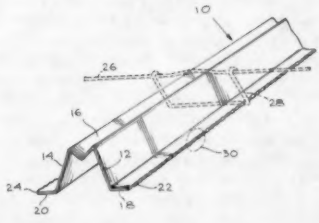
GRAPE STAKE

Charles J. Waugh, 11 S. Hidalgo Ave., Alhambra, Calif. 91801

Filed Nov. 1, 1979, Ser. No. 90,404

Int. Cl.[3] E04C *3/30*

U.S. Cl. 52—732 **7 Claims**



1. A stake having a pair of oppositely sloped leg portions joined by a common trough portion, each leg portion having a flange section extending at an obtuse angle with respect to its associated leg portion and parallel to the other flange section, each flange section terminating in an edge, each such edge being knurled.

4,258,524

APPARATUS FOR FOLDING ONTO THEMSELVES THE FLATTENED FILLING APERTURES OF LARGE SACKS AND FOR CLOSING SAME BY CLOSURE STRIPS

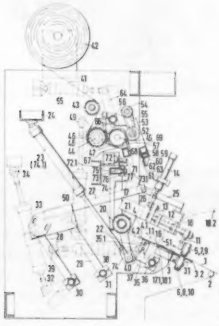
Konrad Tetenborg, and Helmut Hüwelmann, both of Lengerich of Westphalia, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich of Westphalia, Fed. Rep. of Germany

Filed May 9, 1979, Ser. No. 37,349

Claims priority, application Fed. Rep. of Germany, May 16, 1978, 2821444

Int. Cl.[3] B65B *51/06, 51/10, 7/08*

U.S. Cl. 53—137 12 Claims



1. Apparatus for folding a superposed wall of a flattened filling end of a filled large sack of thermoplastic film onto itself and for holding a closure strip placed on the folded-over end and projecting therebeyond to the adjoining sack wall, said apparatus comprising a machine frame; a table-like plate (3) which extends obliquely to a vertically standing filled sack (1), is arranged above the contents of the sack, and terminates at a spacing in front of a medial plane of the sack defined by a vertically placed flattened filling end (1.1) of the sack, the flattened filling end (1.1) being applied to said plate; a flap (4) adjoining and pivotal onto the plate for turning over the end of the filling end (1.1); bars (18) for engaging the filling end; levers (25, 27) mounted in the machine frame for carrying said bars (18) for swinging movement into a gap (16) between the plate (3) and the flap (4) so that the bars take along and form a fold line in the flattened filling end (1.1), said bars extending over lateral regions of the filling end; a supply reel (42) for an adhesive web of closure strips (41) supported by the machine frame; means for intermittently withdrawing the adhesive web of closure strips (41) from said supply reel in steps equal to a desired closure strip width (51), the supply reel (42) having a width corresponding to the length of the closure strip; tong-like cooperating clamping jaw means (72, 73), (62, 63) for clamping the web (41) withdrawn from the supply reel (42); guide means for guiding a front end of the web (41) between the clamping jaw means; a knife (71) for severing the closure strip from the web; suction bar means (77) for holding severed closure strips; pivotal levers (74) positioned in front of the clamping jaws as viewed in the feeding direction of the web (41) for securing the suction bar means in such manner that a part of the closure strip projecting beyond the clamping jaws is bounded by the welding bar means (76), the welding bar means being swingable with the suction bar means (77) onto the plate (3), which serves as a backing plate, during welding of the closure strip held by the plate to a margin of the folded-over end and to the sack wall.

4,258,525

METHOD AND APPARATUS FOR WRAPPING GROUPS OF CIGARETTES

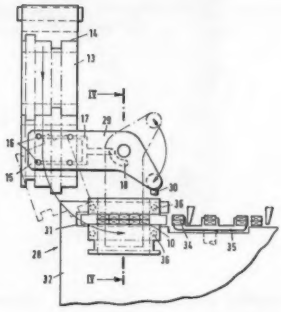
Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Division of Ser. No. 816,069, Jul. 15, 1977, Pat. No. 4,161,093. This application Jan. 24, 1979, Ser. No. 6,306

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1976, 2632967

Int. Cl.[3] B65B *11/08*

U.S. Cl. 53—228 7 Claims



1. In an apparatus for wrapping a stack (10) of a plurality of cigarette packs (11) in a carton blank (12) having a plurality of parallel fold lines, said blank being separable from an elongated web of material (13) having longitudinal axis fed to the apparatus in a vertical plane wherein the axis of said blank parallel to said fold lines is rotationally displaced from the longitudinal axis of said stack, the improvements characterized by:

(a) cutting means for severing a carton blank from said web,

(b) a vertically oriented blank holder (15) mounted for rotation about a horizontal axis laterally displaced from said longitudinal axis of said web and including at least one blank engagement arm means extending radially outwardly from said horizontal axis,

(c) a plurality of suction holders (16) disposed on said blank engagement arm means of said blank holder for retaining a severed carton blank thereon, and

(d) means for rotating said blank engagement arm means and retained carton blank about said horizontal axis to rotate the retained blank to align in parallel relationship said axes of said blank and said stack, and to simultaneously convey said blank to a position adjacent said stack.

4,258,526

METHOD AND APPARATUS FOR BRINGING ARTICLES TOGETHER IN A PACKAGING MACHINE

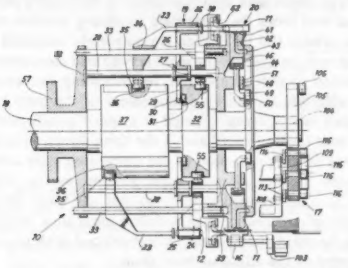
Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Filed Jan. 31, 1979, Ser. No. 8,214

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1978, 2806263

Int. Cl.[3] B65B *43/50, 19/18*

U.S. Cl. 53—399 17 Claims



5. An apparatus for inserting slides (12) into sleeves (11) in a packaging machine, particularly for forming cigarette packs, comprising: two coaxially mounted equal diameter turrets (19, 20) revolving continuously and at the same speed, a plurality of radially disposed and circumferentially spaced slide receiving pockets (21) on one of said turrets, and a plurality of radially disposed and circumferentially spaced sleeve receiving holders (22) on the other one of said turrets and a plurality of axially oriented conveying rams (23) for individually axially shifting each slide towards an associated and adjacent sleeve to effect its insertion therein during the rotation of said turrets.

6. An apparatus according to claim 5 further comprising four pivotally mounted and axially movable corner guides (52) disposed at an open end of each sleeve to ficilitate the insertion of a slide.

4,258,527

METHOD OF AND AN INSTALLATION FOR THE AUTOMATIC PACKING OF STACKS OF ARTICLES

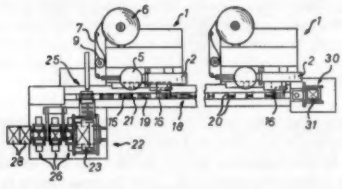
Bernhard Steinbrecher, Südendstr. 54, D-7500 Karlsruhe, Fed. Rep. of Germany

Filed May 29, 1979, Ser. No. 43,493

Claims priority, application Switzerland, May 29, 1978, 5859/78

Int. Cl.[3] B65B *35/50*

U.S. Cl. 53—447 5 Claims



1. A method for automatically packing into cartons articles produced by at least two machines, which comprises the steps of

(a) arranging the articles produced by each machine in a vertical stack;

(b) turning the stacks about parallel horizontal axes toward given loading orientations relative to the vertical;

(c) laterally displacing each of said stacks, while in said given loading orientation, toward linearly arranged spaced loading stations;

(d) conveying said stacks, while in said given loading orientation, successively in a step-by-step manner along a linear path extending from said loading stations to a carton filling station, said stacks being turned in synchronism with the step-by-step conveying operation; and

(e) laterally displacing successive stacks, while in said given loading orientation, from said carton filling station into cartons supported adjacent thereto.

4,258,528

METHOD AND APPARATUS FOR INTRODUCING GROUPS OF CIGARETTES INTO A PACKET AND FOLDING WRAPPER FLAPS

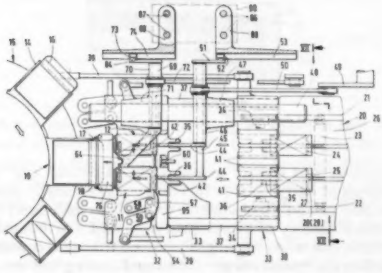
Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Filed Mar. 8, 1979, Ser. No. 19,023

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1978, 2810586

Int. Cl.[3] B65B *19/20*

U.S. Cl. 53—473 15 Claims



1. A method for introducing a pair of objects wrapped in an inner wrapper into an open pack, and in particular for introducing a pair of cigarette groups with a tin foil wrapper into a cigarette pack, comprising:

conveying partially wrapped objects (11,12) in a predetermined direction in a spaced relationship by means of a first conveyor (20),

transferring said objects (11,12) to an intermediate conveyor (33) which removes the objects from said first conveyor with a velocity higher than the transport velocity of said first conveyor,

transferring said objects to a folding station that is stationary in said predetermined direction and having platform halves extending laterally to said direction and capable of being moved together with each half supporting one object, wherein rearwardly projecting end flaps of said objects are folded during a momentary pause in the movement of said objects, shifting said platform halves laterally to said direction to laterally shift the objects such that side end flaps (30,31) are folded by contacting a folding element during the lateral movement as the objects come into contact with one another, and

transferring the objects in said predetermined direction into said open pack.

4,258,529

METHOD OF SEALING A CONTAINER

Ernest L. Smith, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 926,600, Jul. 21, 1978, Pat. No. 4,171,084. This application May 1, 1979, Ser. No. 35,131

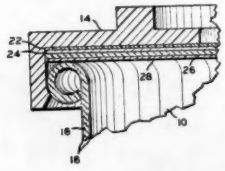
Int. Cl.[3] B67B *5/00*

U.S. Cl. 53—478 6 Claims

1. A method of forming a hermetically sealed recloseable container having a container portion the upper end of which

comprises an opening and a rim surrounding said opening, said method comprising

(1) applying to said upper end of said container portion a closure assembly comprising a sheet-form laminate adapted to rest upon the upper end of said container portion and cover the opening of said container portion and a thermoplastic ring comprising a generally planar portion and a downwardly depending skirt adapted to fit around the outside of said container portion, wherein said generally planar portion of said ring is adapted to rest upon the perimeter of the upper surface of said laminate, wherein said laminate has on its upper surface at least in the area where the generally planar portion of the ring will rest thereon a first coating of a thermoplastic material and on its bottom surface at least in the area wherein said laminate will rest upon the upper end of said container portion a second coating of thermoplastic material, and wherein said laminate includes a base material separating said first coating and said second coating, and



(2) heating said closure assembly to melt bond said first coating of thermoplastic thereof to said generally planar portion of said thermoplastic ring and to melt bond said second coating of thermoplastic to said rim in such a fashion that when the ring is removed from said container portion the bond between the second coating and the rim will break while the bond between the first coating and said thermoplastic ring maintains its integrity such that said ring and said sheet-form laminate remained bonded to provide a unitary closure which can be used to reclose said container.

4,258,530

AUTOMATIC MEAT ARRANGING DEVICE FOR AUTOMATIC MEAT CUTTING MACHINE

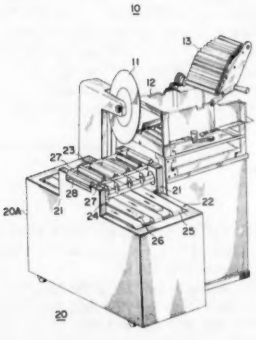
Shigeyuki Mukumoto, 3-19, Yatouenoyama, Kawanishi-shi, Hyogo-ken, Japan

Division of Ser. No. 920,421, Jun. 29, 1978, Pat. No. 4,196,646. This application Nov. 16, 1979, Ser. No. 95,001

Claims priority, application Japan, May 13, 1978, 53/56856; May 13, 1978, 53/56857

Int. Cl.³ B26D *4/46*

U.S. Cl. 53—517 **4 Claims**



1. An automatic meat arranging device for an automatic meat cutting machine comprises:

(1) a plurality of parallel rotation rollers for receiving a meat slice sequentially cut by the automatic meat cutting machine and conveying the meat slice in a spread-flat manner along the longitudinal direction of an array of said parallel rotation rollers,

(2) a plurality of conveying wires each disposed between the rotation rollers and adapted to move the spread-flat meat slice on the rotation roller array in a direction of the width of the meat slice and send it onto a meat tray in the meat slice receiving position; and

(3) meat tray conveying means adapted to forwardly move the meat tray from the meat slice receiving position to a position where the meat slice is completely received on the meat tray, and return the meat tray to said meat receiving position so that a repetitive reciprocating movement can be effected, the forward movement of the meat tray conveying means being effected at a speed synchronized with a meat feeding speed and in the same direction as the meat slice feeding direction of the conveying wire array, the return journey of said meat feeding means being smaller than its forward journey so that one meat slice is overlappingly placed on a preceeding meat slice with an edge of the meat slice attractively displaced with respect to the edge of the adjacent meat slice.

4,258,531

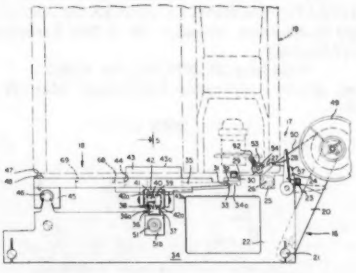
PROCESS AND DEVICE FOR VIEWING ADJACENT MICROFILM FRAMES IN SERIES

Paul A. Kiejzik, 2907 Monterey Ct., Springfield, Pa. 19064

Continuation-in-part of Ser. No. 611,004, Sep. 8, 1975, Pat. No. 4,003,187, and a continuation-in-part of Ser. No. 845,482, May 13, 1976, and Ser. No. 845,483, May 13, 1976, Pat. No. 4,173,837, each is a division of Ser. No. 611,004,. This application Feb. 15, 1978, Ser. No. 878,008

Int. Cl.³ B65B *63/00, 43/26*

U.S. Cl. 53—520 **2 Claims**



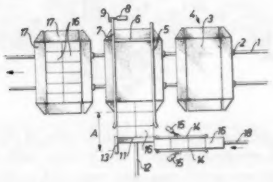
1. A microfilm strip viewing and inserting device comprising in combination at least first and second image projection means mounted in juxta-position and in series with one another for providing a film strip guide path, and for positioning in simultaneously viewable states at least a first frame of consecutive adjacent frames of a microfilm strip through said first image projection means, and the next adjacent consecutive frame through said second projection means, said first and second image projection means positioned to project spaced apart adjacent images, said device further including microfilm insertion means for insertion of severed microfilm strip into a microfilm jacket, said microfilm insertion means being adapted to impel a second frame of severed microfilm strip from a position viewable by the second image projection means position into an insert opening of a microfilm jacket.

4,258,532

ARRANGEMENT FOR THE FEEDING OF OBJECTS TO AND GROUPING THEM ON A BASE

Rolf M. Dilot, Uppakra, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Dec. 19, 1978, Ser. No. 971,085
Claims priority, application Sweden, Dec. 19, 1977, 7714397
Int. Cl.[3] B65B *35/40, 35/44, 49/08*
U.S. Cl. 53—538 6 Claims



1. Apparatus for the automatic feeding and grouping of objects on a flat base supporting the objects comprising:

means to intermittently advance a flat base member along a predetermined path, said flat base member being provided with crease lines to enable edge portions thereof to be folded upwardly;

means to advance a single row of objects intended for feeding and grouping;

means to monitor and control the advance of said objects such that their advance may be stopped upon reaching a desired feeding position;

means to sequentially advance said objects from said feeding position to a first position and a second position removed therefrom, during which movement to said first position said objects may be grouped, whereupon said grouped objects are advanced to said second position onto said flat base member, wherein the distance between said feeding position and said base member exceeds twice the length of the distance between said feeding position and said first position, with said means to sequentially advance said objects being capable of advancing said objects from said feeding position to said first position during the advance of said base member;

first and second lateral guide elements disposed above said means to advance said flat base member such that said flat base member can pass thereunder and also disposed parallel to the direction of movement of said objects and serving to guide said objects onto said flat base member, said flat base member being advanced in a direction from said first lateral guide element toward said second lateral guide element, and said second lateral guide element being movable to permit passage beneath it of said flat base member after said objects have been placed upon it; and

means to fold upwardly and position edge portions of said flat base member to form lateral supporting surfaces for said objects disposed thereon subsequent to placement of said objects onto said flat base member.

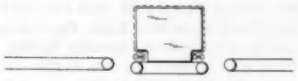
4,258,533

APPARATUS FOR FITTING SHRUNK ON-FOIL HOODS INTO RECESSED PORTIONS OF A MULTI-LAYERED STACK

Peter Aka, and Manfred Grünert, both of Beckum, Fed. Rep. of Germany, assignors to Möllers Maschinenfabrik GmbH, Beckum, Fed. Rep. of Germany

Filed Jan. 2, 1979, Ser. No. 7
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1978, 7804967[U]
Int. Cl.[3] B65B *53/06*
U.S. Cl. 53—557 12 Claims

1. Apparatus for closely fitting a shrunk-on foil hood while the hood is still in the plastic state into recessed portions extending along a pair of opposite sides of a multi-layered stack of packages over which the hood is placed, the recessed portions being arranged to receive members for lifting the stack such as recessed portions formed in the bottom layer of a multi-layered stack where the two opposite sides of at least the bottom layer are recessed inwardly from the sides of the superposed layers and each recessed portion has a downwardly facing surface and an outwardly facing surface so that lifting members of a forklift can be inserted into the recessed portions into contact with the downwardly facing surfaces for lifting the stack, comprising first means for conveying the multi-layered stack with recessed portions along two opposite sides of at least the bottom layer generally in the horizontal direction to and from a working station, a heating unit upstream from the working station for heating the foil hood before the stack and hood are conveyed by said first means to the working station, second means for conveying the multi-layered stack in the same direction of said first means and for supporting the stack at the working station, said second means including a generally horizontal support surface for the stack located at the working station, wherein the improvement comprises two sets of rollers



with one said set being located on an opposite side of said support surface from the other and being located on the opposite sides corresponding to the recessed opposite sides of the bottom layer and arranged to be rectilinearly movably positionable from a first position spaced laterally outward from said support surface to a second position inwardly over said support surface from the first position and into contact with the upwardly extending outwardly facing surfaces within the recessed portions of the stack for fitting the foil hood into shaped close engagement with the outwardly facing surfaces of the recessed portions, said second means being movable generally in the vertical direction relative to said sets of rollers for positioning said sets of rollers above the support surface of said second means in horizontal alignment with the recessed portions of the stack and when said sets of rollers are in the second position for moving said second means relative to said set of rollers for placing the downwardly facing surfaces in the recessed portions in contact with said sets of rollers and moving said sets of rollers relative to the downwardly facing surfaces for fitting the hood into engagement with the downwardly facing surfaces of the recessed portions.

4,258,534

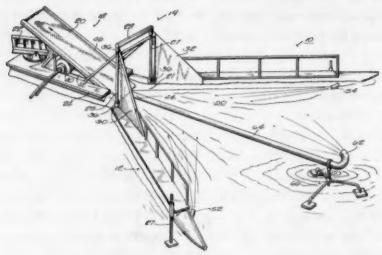
AQUATIC HARVESTING APPARATUS

Charles B. Bryant, N67 W32380, Wildwood Point Rd., Hartland, Wis. 53029

Filed Mar. 7, 1979, Ser. No. 18,220
Int. Cl.[3] A01D *44/00*
U.S. Cl. 56—9 3 Claims

1. Aquatic harvesting apparatus comprising a harvesting barge including a pick-up conveyor with a foraminous belt adjusted to have a conveyor portion extending beneath the surface of the water, a pair of spaced boom means pivotally connected to said barge to provide a converging pick-up throat above said conveyor portion and water pumping means associated with said throat including a suction head in said throat beneath said foraminous conveyor, wall means including side walls and a bottom wall arranged around said submerged conveyor portion to direct water flow toward said foraminous conveyor and to convey harvested material onto said con-

veyor while allowing water to pass through the foraminous conveyor belt to supply the requirements of said pumping



means, and water nozzles connected to said pumping means and supported on said booms to direct water into said throat.

4,258,535

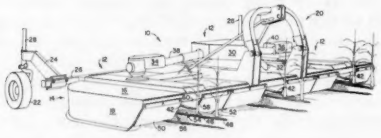
SHIELDING STRUCTURE FOR ROTARY MOWER

William A. Jones, Fonthill, and John Kulak, Fort Colborne, both of Canada, assignors to Deere & Company, Moline, Ill.

Filed May 24, 1979, Ser. No. 41,858

Int. Cl.³ A01D *55/26*

U.S. Cl. 56—13.6 **3 Claims**



1. A mower having:

a substantially horizontal housing;

a generally vertical shaft carried by the housing and projecting therebelow;

a material-cutting blade fixed to the shaft and rotatable therewith, the tips of said blade following a generally horizontal and circular path;

shaft drive means mounted on the housing and powered by a mobile power source; and

an improved shielding sturcture carried at the forward edge of the housing comprising:

a substantially horizontally extending upper portion having a lower edge terminating above the path of the blade tips;

horizontally spaced apart lower portions depending from the upper portion with adjacent lower portions having adjacent edges extending downwardly from the upper portion and forming therewith an opening for permitting passage of bedded crop material therethrough, said edges further being inclined rearwardly from the upper portion and terminating just ahead of the forward edge of said path of the blade tips.

4,258,536

POWER ROTARY CUTTING BLADE WITH RETRACTABLE CUTTING KNIVES

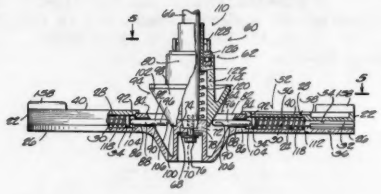
Earl H. Kidd; Herman H. Martin, Jr., and Raymond R. Reid, all of Galesburg, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 7, 1979, Ser. No. 10,267

Int. Cl.³ A01D *35/262, 55/18*

U.S. Cl. 56—17.5 **32 Claims**

1. A rotary lawn mower comprising a chassis, a prime mover mounted on said chassis, a rotating member located within said chassis and having a peripheral edge, said rotating member being operatively connected with said prime mover for rotation thereby, a cutting blade carried by said rotating member and movable between a retracted position in which said cutting blade is positioned inwardly of said peripheral edge and an extended position in which said cutting blade extends outwardly beyond said peripheral edge, and control means con-



nected to said chassis and movable axially of the axis of rotation of said rotating member for moving said cutting blade between said retracted and said extended positions independently of cutting blade rotation.

4,258,537

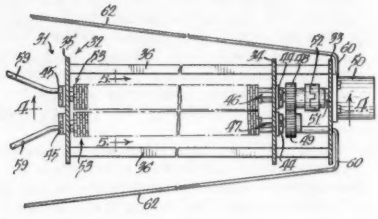
SEED CORN DETASSELING MACHINE

Perry L. Christman, Villa Grove, Ill. 61956

Filed Mar. 16, 1979, Ser. No. 21,213

Int. Cl.³ A01D *45/02*

U.S. Cl. 56—51 **22 Claims**



1. A seed corn detasseling apparatus comprising:

a supporting frame;

means mounting said frame on a wheeled vehicle for movement along a row of seed corn;

a pair of detasseling rollers which have shafts journalled in said frame on fixed axes which are longitudinal of the line of movement of the vehicle, said shafts providing roller cores, said rollers including outer portions of somewhat yielding elastomeric material fixed on said cores, said rollers having circumferential surfaces at least the more forward parts of which are slightly spaced from one another, and said circumferential roller surfaces having lands and grooves with the grooves of one roller surface facing the lands of the other roller surface without intermeshing;

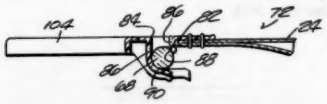
guide means on said frame forward of and below said rollers for guiding the uppermost leaves and tassels between said rollers;

and means for positively rotating both said rollers about said axes so their surfaces move upwardly where they confront one another, said yielding roller outer portions causing minimal leaf damage while said rollers pull a tassel from its socket by upward force exerted through the uppermost leaves.

4,258,538
GRASS CATCHER BAG

Richard R. Morse, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed May 16, 1979, Ser. No. 39,498
Int. Cl.³ B65D *33/16*
U.S. Cl. 56—202 **31 Claims**

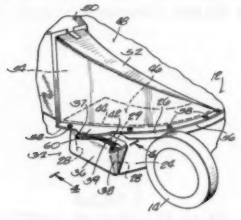


1. A lawn mower comprising a chassis including a grass discharge outlet, a grass collection bag including a main portion having first and second access openings, said first access opening extending in a plane at a substantial angle to the length of said main portion and being defined by first and second pairs of spaced edges, a first panel having opposite side edges and connected to one of said edges of said first pair of edges and movable between an open position in which said opposite side edges extend generally outwardly from said first access opening and a closed position in which said first panel covers said first access opening, a second panel connected to one of said opposite side edges and to, one of said edges of said second pair of edges, a third panel connected to the other one of said opposite edges and to the other of said edges of said second pair of edges, said second and third panels each being foldable upon itself in response to movable of said first panel from said open position to said closed position along fold lines lying substantially in the plane of said first access opening when said first panel is in said closed position, closure means attached to said main portion and to said first panel for securing said first panel in said closed position, and mounting means attached to said chassis and to said main portion for removably mounting said bag on said chassis with said second access opening attached to said grass discharge outlet.

4,258,539
GRASS DISCHARGE CHUTE DEFLECTOR FOR ROTARY LAWN MOWER

Richard E. Pearce, and Ronald M. Stolley, both of Lincoln, Nebr., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Aug. 29, 1979, Ser. No. 70,859
Int. Cl.³ A01D *35/26*
U.S. Cl. 56—320.2 **3 Claims**

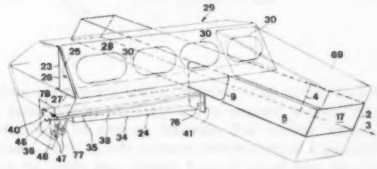


1. A lawn mower comprising a housing enclosing a rotary cutting blade and including a continuous sidewall having therein a side grass discharge opening and a top wall extending from said sidewall and having therein a top grass discharge opening, deflector means on said housing adjacent to said side discharge opening and operative for movement between an open position permitting the escape of grass clippings through said side discharge opening and a closed position blocking the escape of grass clippings through said side discharge opening, means operatively connected with said deflector means for biasing said deflector means toward said open position, and a grass discharge chute detachably attached on said housing in communication with said top discharge opening and including means engaging said deflector means for moving said deflector means from said open position to said closed position against the action of said biasing means during attachment of said grass discharge chute on said housing and for maintaining said deflector means in said closed position against the action of said biasing means when said grass discharge chute is attached on said housing.

4,258,540
AGRICULTURAL BALER

James A. Munro, Long Crendon, near Aylesbury, England, assignor to Sperry Corporation, New Holland, Pa.

Filed May 21, 1979, Ser. No. 41,212
Claims priority, application United Kingdom, May 31, 1978, 25795/78
Int. Cl.³ A01D *90/08*
U.S. Cl. 56—341 **6 Claims**



1. An agricultural baler comprising:
a bale case extending in a first direction;
a crop feeding housing having a first end connected to said bale case and extending therefrom in a second direction transverse to said first direction, said housing terminating at a second end spaced from said first end;
said bale case having a feed opening formed therein adjacent the connection of said first end of said crop feed housing and said bale case;
a first support member connected to said bale case and said crop feed housing, said first member being coextensive with said crop feed housing;
a second support member connected to said bale case and said crop feed housing, said second member being coextensive with said crop feed housing;
said first and second support members having first ends spaced apart by opposed portions of said bale case and having second ends spaced apart by opposed portions of said crop feed housing;
a first wheel support member connected to the second support member adjacent said second end of said crop feed housing and between the first and second ends of the crop feed housing;
a first wheel mounted on said first wheel support member;
a second wheel support member connected to said bale case adjacent said first end of said crop feed housing; and
at least a second wheel mounted on said second wheel support.

4,258,541
OPEN-END ROTOR WITH THREAD DRAW-OFF TUBE

Jacques Le Chatelier, Riedisheim, and Michel Kueny, Brunstatt, both of France, assignors to Societe Alsacienne de Constructions Mecaniques de Mulhouse, France

Filed Mar. 15, 1979, Ser. No. 20,853
Claims priority, application France, Mar. 28, 1978, 78 08871
Int. Cl.³ D01H *1/135*
U.S. Cl. 57—58.89 **4 Claims**

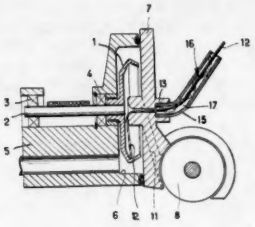
1. An open-end spinning device comprising:
a body having a cavity formed therein and subjected to a partial vacuum;

a high speed rotor of hollow construction having an axis and a generally circular opening coaxial with said axis, said rotor being adapted to rotate on said axis within said cavity of said body;

a cover closing said cavity of said body and facing said opening of said rotor;

a thread delivery duct extending through said cover coaxially with said axis and having a thread exit end; and

a thread twist-increasing device comprising: a tube forming an extension of said exit end of said thread delivery duct and having an elbowed portion, and a wire having a number of helical turns jammed against the internal surface of said tube, a portion of a single turn of said wire being located within said elbowed portion of said tube and forming a thread twist-increasing element, the other turns of said wire being located outside said elbowed portion, whereby said thread in said tube engages only said thread twist-increasing element and includes upstream and downstream strands respectively ahead of and behind said thread twist-increasing element, said thread twist-increasing element extending through the geometrical plane formed by said upstream and downstream strands of said thread.



4,258,542

BUNDLE OF FIBROUS ELEMENTS

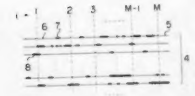
Takao Negishi, and Kazuo Tomiita, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Sep. 7, 1978, Ser. No. 940,437

Claims priority, application Japan, Mar. 13, 1978, 53-27634; Apr. 7, 1978, 53-40279; Jun. 16, 1978, 53-72224; Jul. 18, 1978, 53-87472; Jul. 18, 1978, 53-87473

Int. Cl.³ D02G *3/34*

U.S. Cl. 57—206 **14 Claims**



1. A fibrous bundle composed of a plurality of fibrous elements, wherein at least a partial number of said fibrous elements have a sectional area varying in the axial direction thereof, thick portions of each fibrous element having lengthwisely varying thickness are generally provided with a higher dyeability than thin portions of said fibrous elements, said high dyeability portions being present randomly at a distribution ratio of at least 300 portions per 10 cm of the length of the fibrous bundle and the coefficient of variation of the number proportion of the high dyeability elements corresponding to said high dyeability portions in the section of the fibrous bundle being less than 50%.

4,258,543

METAL CORD

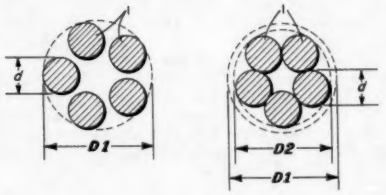
Cesare Canevari, and Luciano Tarantola, both of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed Oct. 9, 1979, Ser. No. 82,606

Claims priority, application Italy, Oct. 31, 1978, 29261 A/78

Int. Cl.³ D07B *1/06;* D02G *3/48*

U.S. Cl. 57—212 **11 Claims**



1. Cord of the single strand type adapted for the reinforcement of articles of elastomeric material, consisting of 3 to 5 steel wires, individually twisted and helicoidally wound together into a swollen geometric configuration, having a diameter greater than the diameter of the same cord in the compact geometric configuration, characterized by the fact that the ratio between the said diameters is between 1.06 and 1.20.

4,258,544

DUAL FLUID FUEL NOZZLE

Daniel E. Gebhart, East Peoria; Brace C. Smith; D. Craig Young, both of Peoria, and Jerry A. Damerell, Washburn, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 15, 1978, Ser. No. 942,567

Int. Cl.³ F02C *7/22*

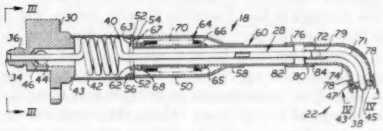
U.S. Cl. 60—39.32 **14 Claims**

1. A fluid fuel nozzle assembly for a gas turbine engine having a combustion chamber mounted in an engine case, the nozzle assembly comprising:

elongated inner passage means for communication of a first fluid fuel to the combustion chamber;

elongated outer passage means for communication of a second fluid fuel to said combustion chamber;

mounting means for sealingly associating the outer passage means about the inner passage means and allowing the inner and outer passage means to thermally expand at



differing rates while retaining gas tight integrity; and

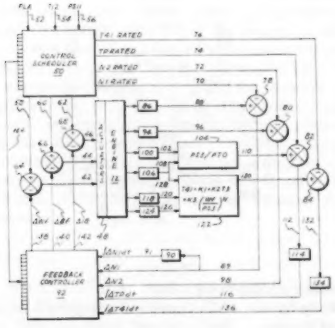
said inner passage means including an elongated conduit having a helical portion and said mounting means including a cylindrical portion substantially surrounding said helical portion.

4,258,545

OPTIMAL CONTROL FOR A GAS TURBINE ENGINE

Gary L. Slater, Lawrenceburg, Ind., assignor to General Electric Company, Cincinnati, Ohio

Filed Jun. 15, 1978, Ser. No. 915,701
Int. Cl.³ F02K 3/02
U.S. Cl. 60—226 R **12 Claims**



1. An improved gas turbine engine control system including:

means for generating engine control signals for maintaining a desired level of engine performance;

means for receiving said engine control signals and for varying engine control variables in response thereto;

means for generating signals representative of the actual values of engine output variables;

means for generating signals representative of rated values of engine output variables for the desired level of engine performance; and

comparison means for comparing the rated engine output variable signals with the corresponding actual engine output variable signals and for generating difference signals

wherein the improvement comprises:

feedback generator means for receiving said difference signals and for generating a feedback signal for each of said control variables, each feedback signal being a function of a plurality of said difference signals;

means responsive to ambient operating conditions for tailoring said feedback signals to maintain control of the engine about a particular operating point with said tailoring being accomplished by weighing said difference signals relative to each other; and

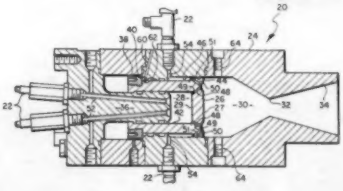
means for receiving said feedback signals and for modifying said engine control signals in response thereto.

4,258,546

PROPULSION SYSTEM

Harold S. Stratton, Woodland Hills, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 15, 1979, Ser. No. 3,324
Int. Cl.³ F02K 9/02
U.S. Cl. 60—259 **13 Claims**



1. A fluid-fueled rocket propulsion system for aerospace vehicles comprising:

a thrust chamber,

a differential area piston slideable within said thrust chamber dividing said thrust chamber into a charging chamber and a combustion chamber,

propellant storage means,

delivery means for delivering propellant from said storage means to said charging chamber,

metering means for delivering propellant at a predetermined flow rate from said charging chamber to said combustion chamber and,

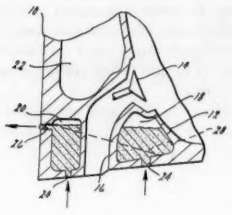
means for initiating movement of said piston to drive propellant from said charging chamber to said combustion chamber.

4,258,547

ENGINE CYLINDER HEAD HAVING THERMAL INSULATION IN A COOLANT PASSAGE ADJACENT AN EXHAUST OUTLET

Gordon W. Fenn, Mt. Clemens, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Division of Ser. No. 584,074, Jun. 5, 1975, Pat. No. 3,987,143.
This application Apr. 19, 1976, Ser. No. 678,269
Int. Cl.³ F02F *1/00*; F01N *7/14*
U.S. Cl. 60—272 **1 Claim**



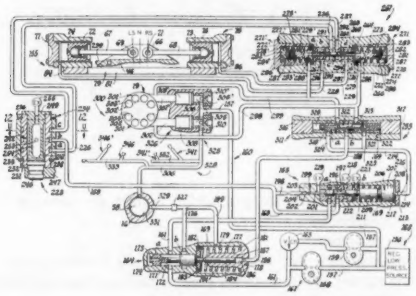
1. In an engine cylinder head having a valved exhaust outlet passage and a coolant passage separated from said exhaust passage by a wall, the improvement comprising: a solid thermal insulating element disposed in said coolant passage against said wall insulating element is a cured epoxy resin.

4,258,548

HYDROSTATIC TRANSMISSION AND CONTROLS

Arthur Hall, III, Indianapolis, and Warren E. Leet, Lizton, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 22, 1979, Ser. No. 51,109
Int. Cl.³ F16D *31/02*
U.S. Cl. 60—445 **14 Claims**



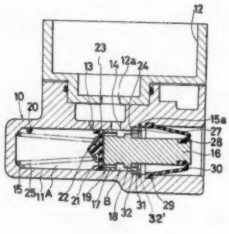
1. In a hydrostatic transmission: hydrostatic power transfer means including a normally driven pump, a normally driving motor, two passages connecting said pump and motor for torque transfer therebetween with one passage having high hydrostatic pressure and the other passage having low hydrostatic pressure, fluid operated displacement varying means operative in response to control pressure for varying the relative displacement of said pump and motor to vary the torque ratio and having the capacity to provide said high hydrostatic pressure proportional to said control pressure, and operation support means having normal fluid flow requirements and low pressure requirements varying in a normal low pressure range for proper full power range operation of said hydrostatic power transfer means and at times having abnormal higher fluid flow requirements and lower pressure requirements in a lower abnormal low pressure range below said normal low pressure range to a minimum abnormal low pressure value; low pressure fluid supply means connected to and providing said low pressure in said operation support means, and having a fluid flow capacity providing said normal fluid flow requirements of said operation support means in said normal low pressure range, and operative in response to said abnormal higher fluid flow requirements to provide said abnormal low pressure range of low pressure values; the improvement comprising: control pressure fluid supply means having regulator means operative in response to said high hydrostatic pressure to regulate said control pressure normally in a high control pressure range proportional to said high hydrostatic pressure; control means connecting said high control pressure supply means to said displacement varying means to vary the relative displacement of said pump and motor; and said regulator means also being concurrently operative in response to said low hydrostatic pressure decreasing in said abnormal low pressure range to proportionally reduce said control pressure to a minimum pressure valve and to proportionally reduce said high hydrostatic pressure.

4,258,549

MASTER CYLINDER

Katsushi Nakashima, Chiryu, Japan, assignor to Aisin Seiki Co., Ltd., Kariya, Japan

Filed Aug. 8, 1979, Ser. No. 64,758
Claims priority, application Japan, Aug. 19, 1978, 53-101056
Int. Cl.³ B60T *11/26*
U.S. Cl. 60—588 **4 Claims**



1. A master cylinder comprising:

a main body having a blind bore and a stepped bore portion formed therein;

a reservoir fluid-tightly communicating with said main body;

a piston slidably fitted within said blind bore for movement between a retracted position and an actuated position and including an annular projection extending therefrom;

a first fluid chamber formed between said piston and a closed wall of said blind bore;

said main body including a compensation port formed

therein through which said first fluid chamber is in fluid communication with said reservoir;

a primary cup secured to said piston to close fluid communication of said compensation port to said bore;

a spring disposed between said closed wall of said bore and said primary cup;

a flexible boot member, one end of which is fluid-tightly fixed to said main body, the other end of which is fluid-tightly fixed to said piston, said boot member and said piston forming a second fluid chamber therebetween;

said main body also including a supply port formed therein through which said second fluid chamber is in constant fluid communication with said reservoir; and

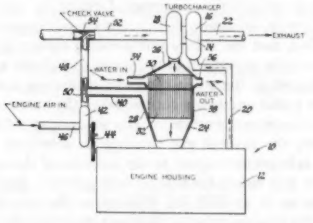
a sleeve engageable with said stepped bore portion for limiting the movement of said piston and having an axial passage formed therein, wherein said piston is slidably mounted within said axial passage formed in said sleeve and wherein said annular projection is engageable with said sleeve so as to limit the retracted position of said piston and wherein said sleeve includes at least one passage formed therein to provide fluid communication from said supply port to said second fluid chamber.

4,258,550

ENGINE CHARGING SYSTEM WITH DUAL FUNCTION CHARGE SUPPLYING AND CHARGE COOLING BLOWER

Stanley J. Hinkle, Union Lake, and Dean M. Dildine, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 11, 1979, Ser. No. 47,012
Int. Cl.³ F02B *29/04, 37/04*
U.S. Cl. 60—599 **7 Claims**



1. The combination in a turbocharged and aftercooled two-stroke cycle internal combustion engine of a positively driven air blower, first means connecting the blower to the turbocharger in a first operational mode for supplying engine charging air during periods of relatively low engine load when the exhaust energy is inadequate to drive the turbocharger at a speed sufficient for it to provide an adequate air supply and second means to connect the blower with the aftercooler to cool the inlet charge in a second operational mode during periods of relatively high engine load when the exhaust energy is adequate to drive the turbocharger at a speed sufficient to sustain engine operation without a supplemental air charge requirement.

4,258,551

MULTI-STAGE, WET STEAM TURBINE

Emil W. Ritzi, Manhattan Beach, Calif., assignor to Biphase Energy Systems, Santa Monica, Calif.

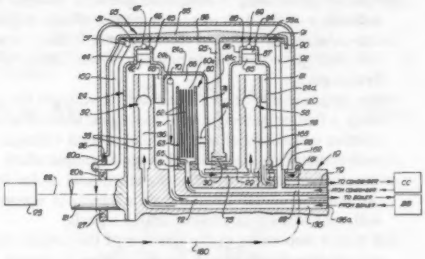
Filed Mar. 5, 1979, Ser. No. 17,456
Int. Cl.³ F01K *7/00, 7/38*
U.S. Cl. 60—654 **19 Claims**

1. In a turbine, the combination comprising

(a) first nozzle means to which wet steam is supplied for expansion in the nozzle means,

(b) a turbine rotor having first vanes to receive and pass water supplied via the nozzle means and forming a ring of water proximate said first vanes, the rotor also having second vanes to which steam is supplied via the nozzle means,

(c) rotary means to receive feed water and to pressurize same, and



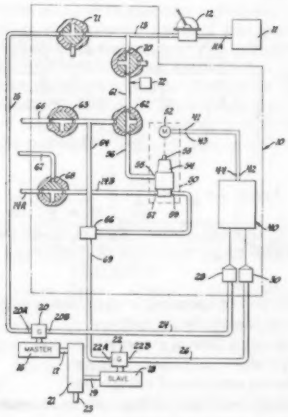
(d) a recuperative zone communicating with said rotary means and with said second vanes to receive the pressurized feed water and the steam that has passed said second vanes for fluid mixing in said zone and for enabling direct heat exchange from the steam to the feed water, the fluid mix in said zone being withdrawn for heating and supply to said first nozzle means as wet steam.

4,258,552

LOAD SHARING SYSTEM FOR MULTIPLE ENGINE POWER PLANTS

John Ryker, Lombard, and Kenneth D. Gillespie, Lisle, both of Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 21, 1979, Ser. No. 13,733
Int. Cl.³ F02D *25/00*
U.S. Cl. 60—711 **4 Claims**



1. A load sharing arrangement for a multiple engine power plant comprising:

first and second internal combustion engines of the type in which the power output is a function of the amount of fuel supplied thereto;

means for connecting said first and second engines to supply power to a common load;

first and second governors connected to said first and second engines respectively wherein each governor is of the type in which a fluid pressure control signal controls the pressure in a power cylinder thereof which in turn controls the supply of fuel to the engine said governor is connected to;

first and second transducers responsive to the pressure in said power cylinders of said first and second governors respectively for generating first and second voltages proportional to the power output of said first and second engines respectively;

means for generating a first fluid pressure control signal indicative of the desired power output of said engines;

means connecting said first fluid pressure control signal to said first governor for setting the power output of said first engine;

means responsive to said first and second voltages for generating a first or second correction signal indicative of the relative magnitude of said first and second voltages;

a bi-directional electric motor having an output shaft;

means applying said correction signals to said motor so that the position of said output shaft is varied in accordance with said first or second correction signals;

and means responsive to the position of the output shaft of said bi-directional motor for generating a second fluid pressure control signal modified from said first fluid pressure control signal and connected to said second governor for controlling the power output of said second engine so as to cause the power outputs of said first and second engines to be substantially equal.

4,258,553

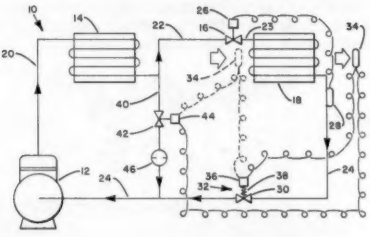
VAPOR COMPRESSION REFRIGERATION SYSTEM AND A METHOD OF OPERATION THEREFOR

James B. Kelly, Chittenango, and David S. Wilson, Fayetteville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 5, 1979, Ser. No. 8,920

Int. Cl.³ F25B *41/00*

U.S. Cl. 62—117 **9 Claims**



1. A method of operating a vapor compression refrigeration system comprising the steps of:

compressing a flow of evaporated refrigerant to increase the temperature and pressure thereof;

condensing compressed refrigerant;

expanding condensed refrigerant to decrease the temperature and pressure thereof;

evaporating expanded refrigerant;

varying the magnitude of a control signal in response to the difference between a control parameter indicative of a load on the refrigeration system and a set point;

modulating the flow of evaporated refrigerant prior to the compression thereof in proportion to the magnitude of the control signal to control the flow of evaporated refrigerant and the capacity of the refrigeration system; and

interjecting cool refrigerant into the evaporated refrigerant subsequent to the modulation and prior to the compression thereof in response to the control signal reaching a predetermined magnitude.

4,258,554

REFRIGERATOR

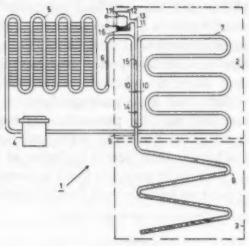
George A. A. Asselman, and Adrianus J. van Mensvoort, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 1, 1978, Ser. No. 911,400

Claims priority, application Netherlands, Jun. 22, 1977, 7706880; Dec. 23, 1977, 7714306

Int. Cl.³ F24B *7/00*; G05D *23/00*

U.S. Cl. 62—175 **7 Claims**



1. A refrigerator comprising a freezing compartment; a refrigerating compartment; a primary refrigerating system containing a primary refrigerant and including a primary evaporator disposed in the freezing compartment; a secondary refrigerating system containing a secondary refrigerant and a control gas and including a secondary evaporator disposed in the refrigerating compartment and a secondary condensor disposed in the freezing compartment in direct heat-exchange contact with the primary evaporator, at least part of the inner wall of said secondary condensor forming a condensation surface whereon secondary refrigerant vapour condenses during operation, said secondary refrigerating system being constituted as a tube closed off at the outer end of the secondary evaporator portion thereof; a reservoir containing a reversible control-gas getter and being connected to the outer end of the secondary condensor portion of the secondary refrigerating system tube, the control gas forming an interface with the secondary refrigerant vapour at the location of the condensation surface; and means for heating said getter to generate free control gas so as to shift the position of the interface with respect to the condensation surface and thus vary the effective condensation surface area to thereby control the temperature of said secondary evaporator portion.

4,258,555

AIR-CONDITIONED PASSENGER MOTOR VEHICLE

Dieter Scharm, Dettenhausen; Ludwig Emmer, Sindelfingen; Theodor Reinhard, Böblingen, and Rudi Kneib, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 11, 1978, Ser. No. 950,283

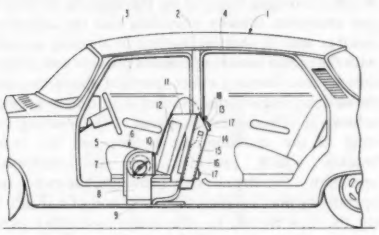
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1977, 7731774

Int. Cl.³ B60H *3/04*

U.S. Cl. 62—244 **14 Claims**

1. An air-conditioned passenger motor vehicle having a passenger cell with a front seating portion and a rear seating portion and being equipped with a standard engine-driven compressor-type air conditioner comprising a first evaporator means and a first blower, partition means separating the front and rear portions, the front portion having two front seats divided by an armrest, a second blower arranged underneath the armrest, a suction channel open to the atmosphere and having a filter means in connection with the second blower, a second evaporator means located between the two front seats, a closet-like housing in communication with the second evaporator and located in the rear seating portion, actuating means

for the manual actuation of the second evaporator means and the second blower, the second evaporator means and the second blower being used to cool the rear seating portion of the cell and the closet-like housing.



4,258,556

TORSION SPRING CLUTCH

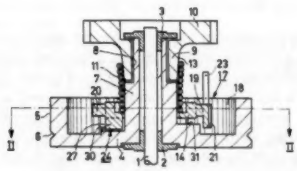
Henricus M. Ruyten, Eindhoven, Netherlands, and Johann Veigl, Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 31, 1978, Ser. No. 956,310

Claims priority, application Austria, Nov. 10, 1977, 8026/77

Int. Cl.³ F16D *7/02, 13/08*

U.S. Cl. 64—30 E **4 Claims**



1. A torsion spring clutch comprising:

first and second clutch sections arranged coaxially with and rotatable relative to each other, the second of said sections having a conical portion which widens in the direction away from the first section,

a helical torsion spring slid over said clutch sections, including said conical portion, for transmitting force therebetween, and

means for axially adjusting the position of the spring relative to the second section so as to change the maximum force transmitted between the two sections,

characterized in that said means comprise a mounting section for the torsion spring, and detachable means for rigidly connecting said mounting section to the first section, said mounting section being rotatable relative to the first section upon detaching of the connecting means, said mounting section and said first section having cooperating guide surfaces for relative axial movement of the mounting section with respect to the first section upon rotation of the mounting section relative to the first section.

4,258,557

KNITTING MACHINE FOR PRODUCING KNITTED GOODS WITH COMBED-IN FIBRES

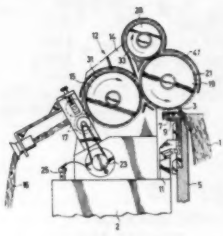
Klaus Kunde, Nürtingen, and Klaus Schöffski, Stuttgart, both of Fed. Rep. of Germany, assignors to Sulzer Morate GmbH, Fed. Rep. of Germany

Filed Sep. 22, 1978, Ser. No. 945,017

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1977, 2748941

Int. Cl.³ D04B *9/14*

U.S. Cl. 66—9 B **7 Claims**



1. A knitting machine having knitting needles for producing knitted goods having combed-in fibers, including at least one rotatable combing-in cylinder which is provided with a carding clothing, a feed position at which fibers are laid into the carding clothing of the combing-in cylinder, a combing-in position at which fibers are taken from the carding clothing of the combing-in cylinder by the knitting needles, and at least one rotatable regularization cylinder which also has a carding clothing, which cooperates with the combing-in cylinder for rendering uniform the density of the fibers carried thereon, wherein the two carding clothings have resilient card wires being in engagement along an engagement region and wherein the relative spacings, surface speeds and card wire positions of the combing-in cylinder and the regularization cylinder are so selected that the card wires of the regularization cylinder comb and displace the fibers which are carried by the card wires of the combing-in cylinder, in the opposite direction to the direction of rotation of the combing-in cylinder and thereby regularize said fibers, but do not substantially pick up said fibers.

4,258,558

SAVING APPARATUS FOR PROGRAM SHEET IN AUTOMATIC CONTROL SYSTEM OF FLAT KNITTING MACHINE

Hideharu Tobe, Tokyo, Japan, assignor to Heiko Seisakusho, Ltd., Tokyo, Japan

Filed Mar. 12, 1979, Ser. No. 19,431

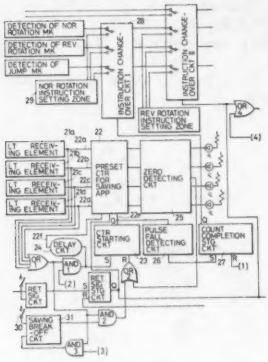
Claims priority, application Japan, Mar. 15, 1978, 53-29523

Int. Cl.³ D04B *15/00, 15/66*

U.S. Cl. 66—237 **4 Claims**

1. In an automatic control system for a flat knitting machine where marks formed at predetermined positions of a program sheet fed stepwise by a feed drum of a mark reader are verified by a photo-electric element to emit signals on detection of the marks and perform operations corresponding to the detected marks, an apparatus for saving the program sheet characterized in that a plurality of basic saving frequency setting mark columns, a normal rotation mark column for producing a signal of rotating the feed drum of the mark reader in the normal direction and a reverse rotation mark column for producing a signal of rotating the feed drum of the mark reader in the reverse direction are formed on the program sheet and the mark reader is provided with means for detecting marks formed on the respective columns, means for rotating the feed drum in the normal direction by one step on detection of the normal rotation mark and rotating the feed drum in the reverse

direction by one step on detection of the reverse rotation mark, means for rotating the feed drum in the normal direction by one step when the difference between the set value of the saving frequency and the actual saving frequency becomes


DETECTION OF NOR ROTATION MK
DETECTION OF REV ROTATION MK
DETECTION OF JUMP MK
NOR ROTATION INSTRUCTION SETTING ZONE
REV ROTATION INSTRUCTION SETTING ZONE
PRESET CTR FOR SAVING APP
ZERO DETECTING CKT
STR. STARTING CKT
PULSE FAIL DETECTING CKT
COUNT COMPLETION SYS. CKT
DELAY CKT
SAVING BREAK DET. CKT

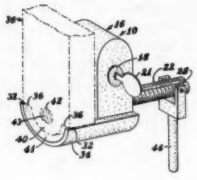
zero, and means for stopping the program sheet until courses of the number corresponding to the saving frequencies have been knitted when the mark reader reads out marks on the saving frequency setting columns formed on the program sheet.

4,258,559

BOAT MOTOR LOCKING DEVICE

George T. Linn, 871 Wyckford Dr., Apt. E, Indianapolis, Ind. 46224

Filed Jul. 14, 1976, Ser. No. 705,071
Int. Cl.[3] E05B *73/00*
U.S. Cl. 70—19 **6 Claims**



1. A boat motor lock means, for locking the boat motor to the associated boat, said lock means being of a type comprising:

a body member;

a lock carried by the body member and having a locking member movably related to the body member, the locking member being lockingly engageable with the clamp bolt of the boat motor which clamps the motor to the boat, the locking engageability of the said locking member to the clamp bolt, being operative to restrict a motor-releasing rotation of the clamp bolt with respect to the locking member;

the said body member being provided with means engageable with the said clamp bolt to restrict movement of the clamp bolt axially;

the body member being provided with an opening which receives the clamp bolt and also provided with an extension extending axially to the axis of the clamp bolt, said extension providing an abutment engageable with the mounting bracket of the boat motor so as to prevent movement of the body member which would release or permit release of the boat-clamping position of the clamp bolt;

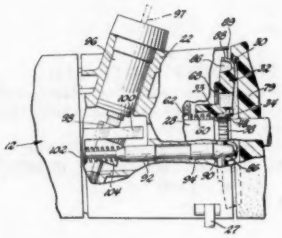
in such lock means, the improvement comprising the provision of said body member extension as an abutment member, a substantial portion of which is located below the axis of the said clamp bolt and extends below the portion or portions of the boat motor's mounting bracket which is or are abuttingly engaged by the abutting surface of the said extension, thereby providing that the said abutment member and its abutting surface in abutting engagement with the motor mounting bracket provide and achieve not only a motor-locking effect specified above but also that the said motor mounting bracket is utilized to provide and achieve an effective concealment of the abutting engagement of the said abutting surface and the mounting bracket which provides the said motor-locking operativity, thereby not only providing the motor-locking operativity but lessening the likelihood of a thief's breaking the lock means, by effectively concealing its nature and components by achieving this extra effect of the boat motor's mounting bracket.

4,258,560

SHAFT LOCK ASSEMBLY FOR VEHICLE STEERING COLUMN

Michael E. Jessop, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 18, 1979, Ser. No. 49,725
Int. Cl.[3] B60R *25/02*
U.S. Cl. 70—252 **3 Claims**

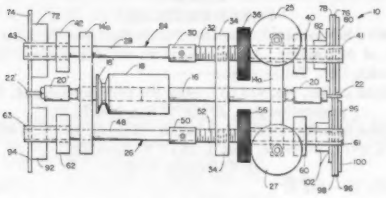


1. A steering column assembly for an automotive vehicle comprising a steering column jacket, a steering shaft rotatably mounted within said jacket, a housing fixed to the upper end of said jacket, a steering wheel operatively mounted at the upper end of said housing and drivingly connected to said steering shaft, a steering shaft lock assembly fixed at the upper end of said steering shaft for rotation therewith, said shaft lock assembly being mounted in a transverse plane between an upper extremity of said housing and the lower extremity of said steering wheel, lock bolt means supported by said housing for axial sliding movement therein between a locking position engaged with said shaft lock assembly to prevent the rotational movement of said steering shaft and an unlocked position removed from said shaft lock assembly to allow said steering shaft to be turned, said shaft lock assembly comprising a metallic hub drivingly connected to said steering shaft and a plastic disc portion, said hub portion having radial arm means, said disc portion having radial recess means for said arm means to drivingly couple said hub portion to said disc portion, said disc portion having a series of arcuately spaced blind recesses axially formed therein for receiving said lock bolt means when said lock bolt means is moved axially into said locking position, said disc portion having a peripheral generally cylindrical edge to hamper entry of tooling into the interior of said column, said disc portion providing a continuous outer surface for forming said blind recesses so that said lock bolt means cannot be displaced by tooling to said unlocking position to thereby prevent the unauthorized rotation of said steering wheel and said steering shaft for vehicle steering purposes.

4,258,561
COILING MACHINE

Stephen A. Platt, Grand Haven, Mich., assignor to S. A. Platt, Inc., Grand Haven, Mich.

Filed May 21, 1979, Ser. No. 40,556
Int. Cl.[3] B21F *3/02, 3/04*
U.S. Cl. 72—142 7 Claims



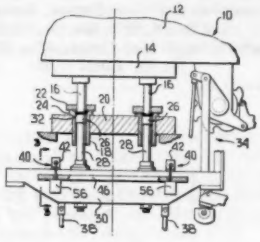
1. A wire coiling machine comprising:
a rotary powered spindle having a front end and a rear end;
like front and rear arbors retained at said front and rear ends of said spindle to rotate therewith;
a pair of like drive subassemblies comprising:
a pair of rotary shafts astraddle of and parallel to said spindle, each having a front end adjacent said front arbor and a rear end adjacent said rear arbor;
a pair of like rear drive rings respectively on said rear ends of said shafts, having metal peripheral surfaces engaging opposite sides of said rear arbor;
a pair of like front drive rings respectively on said front ends of said shafts, having metal peripheral surfaces engaging opposite sides of said front arbor;
said shafts, front drive rings and rear drive rings being suspended on axes vertically coplanar with the centerlines of their respective masses;
a pair of work rings respectively on said front ends of said shafts adjacent said pair of front drive rings, positioned to engage coiling wire against said front arbor;
said front drive rings forming an axial shoulder for the wire engaged by said work rings;
said work rings having resilient peripheral wire engaging surfaces; and
biasing means between said drive subassemblies for retaining said pairs of front and rear drive rings in engagement with said arbors and retaining said work rings in coiling relation to said front arbor;
whereby said work rings apply coiling pressure to the wire free of torque imbalance pressures and without pressure from the weight of the suspended drive subassemblies.

4,258,562
PRESS STRUCTURE HAVING SHIFTABLE STOP

Donald E. Miller, Mt. Prospect, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Mar. 26, 1979, Ser. No. 24,227
Int. Cl.[3] B21D *45/00*
U.S. Cl. 72—344 10 Claims

1. In a press structure of the type for forming tubular bodies, said press structure including a fixed die sleeve, a die pad movable within said die sleeve, a punch mounted for reciprocation into and out of said die sleeve and for effecting movement of said pad within said die sleeve, and a movable support for said die pad; a stop mechanism cooperable with said movable support for positioning said die pad in a recessed position within said die sleeve for receiving a material slug to be formed and for permitting movement of said die pad to project axially

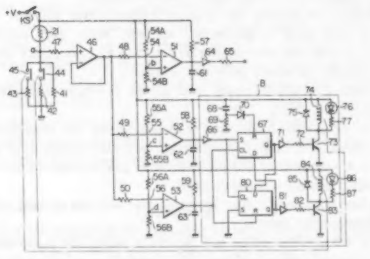


beyond said recessed position for moving a formed tubular body out of said die sleeve.

4,258,563
GAS SENSOR

Eturo Yasuda; Yoshihiro Segawa, both of Okazaki, and Minoru Ohta, Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Oct. 23, 1978, Ser. No. 953,955
Claims priority, application Japan, Dec. 16, 1977, 52-152271
Int. Cl.[3] G01N *27/12*
U.S. Cl. 73—23 3 Claims



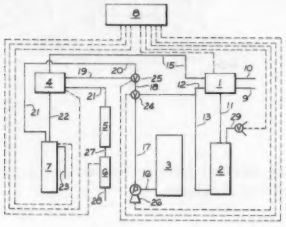
1. In a system for controlling the air-fuel ratio applied to a combustion engine by detecting the oxygen content in the exhaust gases, said system including a resistive-type oxygen responsive element connected to a voltage source in series with resistance means for producing an electric output corresponding to the resistance of said oxygen responsive element, a circuit responsive to said output signal for compensating for the dependency of the output signal of the oxygen responsive element on the environment, said circuit comprising:
first comparison means for comparing said electric output of said oxygen responsive element with a first predetermined value;
second comparison means for comparing said electric output of said oxygen responsive element with a second predetermined value;
resistance control means responsive to output signals of said first and second comparison means for controlling the resistance of said resistance means so that said electric output of said oxygen responsive element varies between said first and second predetermined values of said first and second comparison means to remove at least some of the variation of said electric output of said oxygen responsive element due to said environmental dependency.

4,258,564

POLYMER CHARACTERIZATION APPARATUS

Joseph M. Hulme, and William E. Thibodeau, both of Sarnia, Canada, assignors to Polysar Limited, Sarnia, Canada

Filed Dec. 6, 1979, Ser. No. 101,016
Claims priority, application Canada, Mar. 28, 1979, 324302
Int. Cl.³ G01N *11/00*
U.S. Cl. 73—61.1 C **8 Claims**



1. An apparatus for obtaining from a polymerization reactor a sample of polymer dissolved in one or more hydrocarbon diluents and for determining the polymer content of said sample and a molecular weight of said polymer, which apparatus comprises:

(a) polymerization reactor means,

(b) line for removing from said reactor means a polymeric product dissolved in one or more hydrocarbon polymerization diluents,

(c) valve means for the removal from said line of an essentially constant volume sample of said polymeric product dissolved in said diluent,

(d) means for storing hydrocarbyl solvent,

(e) dilution means for adding hydrocarbyl solvent to and mixing said hydrocarbyl solvent with said essentially constant volume sample to provide an essentially constant volume of dilute polymer solution,

(f) line for transferring said dilute polymer solution to a selector valve,

(g) a first line from said selector valve for transferring a constant volume of said dilute polymer solution to a solution viscometer means which is maintained at an essentially constant temperature,

(h) line for transferring hydrocarbyl solvent to said solution viscometer means,

(i) a second line from said selector valve for transferring a constant volume of said dilute polymer solution to one or more gel permeation chromatographic columns,

(j) line for transferring hydrocarbyl solvent to said gel permeation chromatographic columns,

(k) means for causing said dilute polymer solution to flow through a capillary in said solution viscometer means and to activate a timing device to determine and record the flow time for the flow through said capillary of a constant volume of said dilute polymer solution,

(l) means for causing said hydrocarbyl solvent to flow through a capillary in said solution viscometer means and to activate a timing device to determine and record the flow time for the flow through said capillary of a constant volume of said hydrocarbyl solvent,

(m) means for causing the flow through said one or more gel permeation chromatographic columns of hydrocarbyl solvent at an essentially constant rate of flow,

(n) means for determining and recording the refractive index difference as a function of time for the effluent from said one or more gel permeation chromatographic columns, said refractive index difference being the difference between the refractive index of the column effluent and that of a control fluid,

(o) micro computer means programmed to control the operation of the apparatus, to determine and record said flow times from said solution viscometer means, to record said refractive index difference as a function of time and to calculate from said refractive index difference the polymer content of said sample and from said flow times and polymer content a molecular weight of said polymer, and

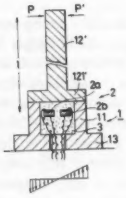
(p) recorder/display means for providing the data calculated in (o).

4,258,565

FORCE DETECTOR

Takehiro Sawayama; Ichizo Ito; Toshio Aga, and Tetsuo Ando, all of Musashino, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Division of Ser. No. 910,637, May 30, 1978, abandoned. This application Jun. 29, 1979, Ser. No. 53,214
Claims priority, application Japan, May 30, 1977, 52-63122; Jun. 1, 1977, 52-64478; Jun. 1, 1977, 52-71435[U]
Int. Cl.³ G01L *1/16*
U.S. Cl. 73—141 R **3 Claims**



1. A force detector for detecting a force directly as a stress comprising:

a columnar pressure receiving member;

a container vessel secured to one end of the columnar pressure receiving member;

a pair of piezoelectric elements in said vessel and positioned opposite to each other about the center axis of the pressure receiving member so that the piezoelectric elements receive differential stresses produced in the vessel by said pressure receiving member; and

securing means comprising inelastic material engaging said piezoelectric elements for firmly securing and sealing said elements inside said vessel to provide that said elements are effectively integral with said vessel;

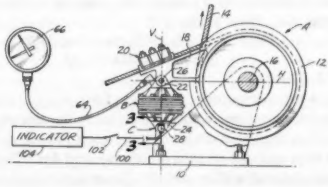
said pair of piezoelectric elements serving to directly detect a force to be measured applied to said columnar pressure receiving member, and to convert said force into an electric output signal.

4,258,566

LOAD INDICATING APPARATUS HAVING A HYDRAULIC SENSING UNIT AND COUPLING PIN TYPE ELECTRONIC SENSING UNIT

Elmer L. Decker, Long Beach, and James Moon, Santa Ana, both of Calif., assignors to Decker Engineering Corporation, Long Beach, Calif.

Filed Jul. 2, 1979, Ser. No. 53,917
Int. Cl.³ G01L *1/26*
U.S. Cl. 73—141 R **17 Claims**



1. Load sensing means for load indicating apparatus having

a pair of spaced apart opposed members supported for relative movements under applied load forces, comprising:

(a) a pair of load sensing units, one of the hydraulic type and one of the electronic type, mechanically interconnected in series operative relationship between said opposed members;

(b) said hydraulic load sensing unit including a casing structure having upper and lower pivotal connections respectively with said opposed members; and

(c) one of said pivotal connections including an electronic lead sensing unit.

4,258,567

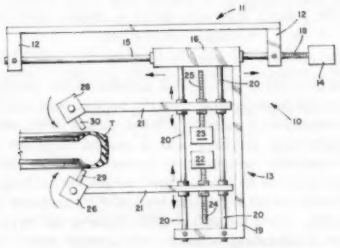
TIRE SIDEWALL DEFORMITY TESTER AND METHOD

Thomas W. Fisher, III, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sep. 27, 1979, Ser. No. 79,401

Int. Cl.³ G01M *17/02*

U.S. Cl. 73—146 **19 Claims**



16. Apparatus to detect irregularities in the sidewall of a rotatable tire comprising transducer means monitoring the contour of the sidewall of the tire and providing an output signal proportional thereto, and circuit means receiving the output of said transducer means and providing an output signal when an irregularity of a predetermined extent exists for a predetermined time period.

4,258,568

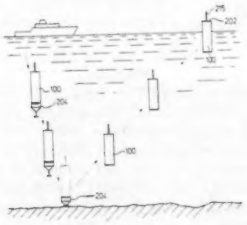
WATER CURRENT METER

Reinder Boetes, 15 Wadland Crescent, Apt. 402, and Boris P. Sukhov, 70 B Larkhall St., both of St. John's, Newfoundland, Canada

Filed Jul. 19, 1979, Ser. No. 58,644

Int. Cl.³ G01W *1/02*

U.S. Cl. 73—170 A **14 Claims**



1. A water current meter comprising, in combination: a housing having a vertical axis, three accelerometers each having a sensitive axis mounted at 90° to each other within said housing wherein the sensitive axis of one of said accelerometers is coincident with said housing vertical axis, and the other axes are substantially horizontal, a magnetic compass disposed within the housing for measuring an angle defined between magnetic North and the sensitive axis of one of said substantially horizontal accelerometers, a depth sensor, and circuitry for emitting electronic signals from said accelerometers, compass and depth sensor indicating magnitude of horizontal current relative to depth, direction of horizontal current relative to depth, and magnitude and direction of vertical current relative to depth.

4,258,569

SELF-REGULATED DEVICE FOR TEMPERATURE STABILIZATION OF AT LEAST ONE CONNECTION POINT, AND TEMPERATURE-CONTROLLED PLUG-IN CONNECTOR FOR THE USE OF SAID DEVICE

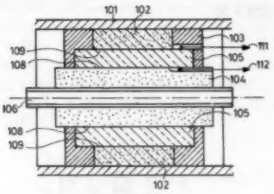
Francois Buchy, and Jacques Cadier, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Aug. 9, 1979, Ser. No. 65,339

Claims priority, application France, Aug. 11, 1978, 78 23674; Jan. 26, 1979, 79 02097

Int. Cl.³ G01K *7/22*

U.S. Cl. 73—343 R **5 Claims**



1. A self-regulated device for temperature-stabilization of at least one connection point, wherein said device comprises at least one positive-temperature-coefficient resistor supplied at constant voltage, a good thermal contact being ensured between that portion of the device which is occupied by the connection point and the material constituting said positive-temperature-coefficient resistor, said resistor comprising a cylindrical sleeve having metallized internal and external walls so as to permit the supply of current to the resistor, the interior of the bore being adapted to constitute a housing for the connection point to be temperature-stabilized.

4,258,570

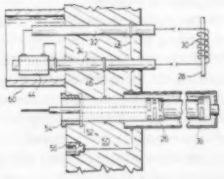
HIGH VOLTAGE POWER TRANSFORMER WINDING TEMPERATURE CONTROL SYSTEM

Fritz Weiler, 17 Kendleton Dr., Rexdale, Ontario, Canada

Filed Jan. 15, 1979, Ser. No. 3,367

Int. Cl.³ G01K *1/08*

U.S. Cl. 73—350 **16 Claims**



1. An electrically conducting plate, which can e cylindrically formed and which in such cylindrical form can be used as a resistor in a winding temperature heater well, comprising a section thereof which has formed therein a plurality of apertures increasing the electrical resistance of the plate uniformly therealong, wherein the apertures in the apertured section are sized and shaped as equivalent rectangles aligned in vertical and horizontal rows, vertical being the direction of current

flow through the plate, each horizontal row displaced 180° with respect to vertically adjacent rows, defining horizontal and vertical paths about the apertures such that the vertical paths are twice the width of the horizontal paths.

4,258,571

MAGAZINE WITH CENTERING AND COUPLING ELEMENTS FOR MEASURING AND SAMPLING DEVICES

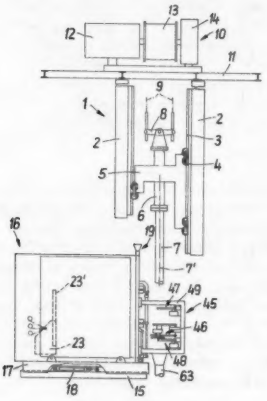
Arnold Jürgens; Herbert Koopmann, and Wilhelm Schwarz, all of Wilhelmshaven, Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Feb. 12, 1979, Ser. No. 11,376

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1978, 2807152

Int. Cl.³ G01K *1/14*; G01N *1/12*

U.S. Cl. 73—425.4 R **4 Claims**



1. In combination, a handling device for use in monitoring a metal melt wherein the handling device handles both measuring lances and melt samples: the handling device comprising:

coupling means positioned above the metal melt for holding and hoisting measuring lances and melt samples;

guiding means for guiding the coupling means;

a moveable magazine for storing measuring lances and sampling probes;

means for moving the magazine toward and away from the coupling and guiding means;

a storage carriage in the magazine for storing measuring lances and sampling probes in a vertical orientation;

means for reciprocating the storage carriage within the magazine in the same direction that the magazine reciprocates whereby the probes and lances are moved in and out of alignment with the coupling and guiding means;

a stripping and separating device secured to the forward end of the magazine for movement with the magazine in and out of alignment with the coupling and guiding means, said stripping and separating means including two clamping jaws axially spaced from one another for gripping individually measuring lances and melt samples upon removing the lances and samples from the melt and hoisting the lances and samples to extend between the jaws for gripping thereby; the stripping and separating means further including a cutting member disposed between the jaws for cuttinhg and thereby separating melt samples from the coupling means.

4,258,572

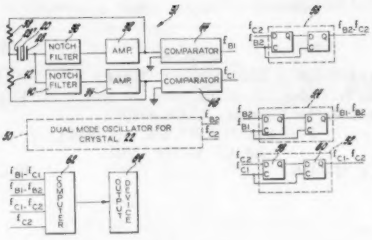
SINGLE AXIS CRYSTAL CONSTRAINED TEMPERATURE COMPENSATED DIGITAL ACCELEROMETER

Edward J. Loper, Jr., Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 3, 1979, Ser. No. 99,869

Int. Cl.³ G01P *15/09*

U.S. Cl. 73—497 **3 Claims**



1. A temperature compensated accelerometer comprising first and second piezoelectric crystals, each crystal capable of being simultaneously excited in a first resonant mode which is highly temperature sensitive and a second resonant mode which is relatively temperature insensitive, each resonant mode being sensitive to acceleration, means for exciting each of said first and second crystals in both of their resonant modes simultaneously, means for differentially loading said crystals in response to acceleration whereby one crystal senses tensile strain and the other senses compressive strain, means producing output signals Δf_B and Δf_C of a frequency corresponding respectively to the difference between the respective first resonant modes of the two crystals and the respective second resonant modes of the two crystals and producing an output signal $\Delta f_{B\text{-}C}$ of a frequency corresponding to the difference between the first and second resonant modes of one of said crystals, means responsive to said output signals for separating the effects of temperature and acceleration on the frequency of the Δf_C output signal to obtain a temperature compensated value of acceleration.

4,258,573

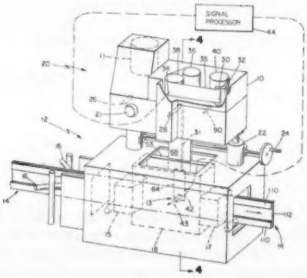
IN LINE ULTRASONIC INSPECTION APPARATUS AND METHOD

Gerard O. Fontaine, Cumberland, R.I., assignor to Checon Corporation, Attleboro, Mass.

Filed Sep. 7, 1979, Ser. No. 73,496

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—621 **6 Claims**



1. Method of in line ultrasonic inspection of linearly extending brazed composite workpiece including a linearly extending

bonded region, traveling linearly at a given speed, comprising the steps of

focussing a sequence of ultrasonic signals on said workpiece

reciprocating the focus of said signals in the plane of said workpiece in a sweep transverse to the direction of travel of said workpiece, said sweep being at least commensurate with the width of said bonded region,

receiving signals reflected from said workpiece

processing said received signals to derive control signals therefrom

inputting said control signals to a marker

reciprocating said marker in phase with the reciprocation of said focus

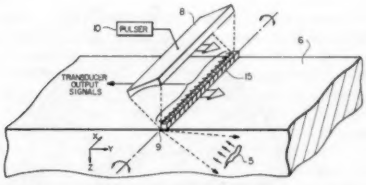
moving a linearly extending record medium past said marker transversely to the reciprocation of said marker at a speed not greater than one-half said workpiece given speed, whereby said marker traces successive generally parallel strokes against said record medium.

4,258,574

METHOD AND APPARATUS FOR ULTRASONIC IMAGING USING A LINE SOURCE AND A LINEAR RECEIVER ARRAY

B. Percy Hildebrand, and S. R. Doctor, both of Richland, Wash., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Mar. 16, 1979, Ser. No. 20,979
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—625 **14 Claims**



1. Apparatus for ultrasonically imaging objects of interest, comprising:

(a) an elongate source of coherent acoustic waves adapted for transmitting coherent acoustic waves to a line focus;

(b) an elongate linear array of substantially point receivers, said receiver array being located parallel to said elongate source and substantially at the line focus so that the acoustic waves propagated from the source interact with an object of interest and are detected by the receiver array; and

(c) means connected to said elongate source and receiver array for translating both said source and array relative to the object of interest so that an area is swept out across the object of interest and said object is imaged.

4,258,575

ULTRASONIC IMAGING APPARATUS OPERATING ACCORDING TO THE IMPULSE-ECHO METHOD

Klaus Buchner, Uttenreuth, and Rainer Haerten, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 27, 1979, Ser. No. 15,740
Claims priority, application Fed. Rep. of Germany, May 11, 1978, 2820660
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—626 **9 Claims**

1. Ultrasonic imaging apparatus operating according to the impulse-echo method, particularly for medical diagnostics, said apparatus comprising

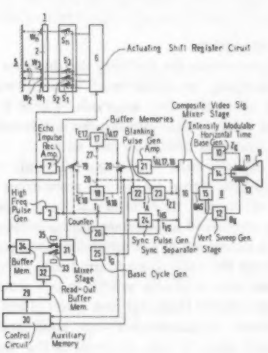
(a) an ultrasonic applicator operable for line-by-line ultrasonic scanning of an examination subject,

(b) an image display device for coupling with said ultrasonic applicator, and having a line generator operable for controlling said image display device for imaging echo impulses from the ultrasonic applicator as lines, and an image generator operable for controlling said image display device for the displacement of the lines as a function of the displacement of the ultrasonic scanning in the subject, said image display device having a prescribed line scan time for real time display of a currently scanned image,

(c) said ultrasonic applicator having a time period of its ultrasonic transmission/reception cycles set to a value which corresponds to an integral multiple of the prescribed line scan time of the image display device, and

(d) control means operating at a clock rate and controlling the time period of said ultrasonic transmission/reception cycles,

(e) sequentially operating frequency converter memories controlled by said control means for storing an input line signal corresponding to a line sequence of echo impulses to be displayed as one line on said image display device and for reading out the stored line signal at a predetermined read-out time occurring at a fixed time in relation to the operation of said image display device and at a higher frequency than that corresponding to the time period of said ultrasonic transmission/reception cycles such that the ultrasonic image currently being supplied by said ultrasonic applicator is displayed in real time, and



(f) further memory, characterized in that the further memory comprises an echo line auxiliary memory (**29**) operable under the control of said control means for storing an input line signal from said ultrasonic applicator corresponding to a line sequence of echo impulses to be displayed as one line on said image display device,

(g) signal path means connected between said ultrasonic applicator and said sequentially operating frequency converter memories and comprising a real time signal path for a current line sequence of echo impulses as supplied by said ultrasonic applicator,

(h) said echo line auxiliary memory (**29**) being connected between said ultrasonic applicator and said sequentially operating frequency converter memories in parallel with said real time signal path, said echo line auxiliary memory being selectively operable to store a current line sequence of echo impulses under the control of said control means and being selectively operable for supplying a previously stored line sequence to said sequentially operating frequency converter memories without change of the predetermined read-out time of the stored line signals from said frequency converter memories, whereby the line sequences selectively stored by said auxiliary memory are stored and read-out in step with the time period of the ultrasonic transmission/reception cycles and at an integral multiple of the prescribed line scan time of the image display device.

4,258,576

PULSE-ECHO ULTRASONIC WAVE-ENERGY IMAGING SYSTEM INCORPORATING HIGH-VELOCITY OSCILLATED TRANSDUCER

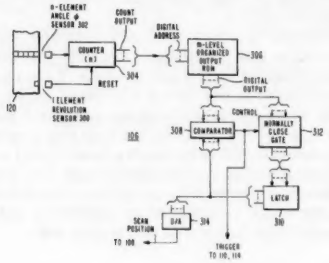
David H. R. Vilkomerson, Princeton, and Reuben S. Mezrich, Rocky Hill, both of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 964,898, Dec. 5, 1978, Pat. No. 4,197,751. This application Feb. 15, 1979, Ser. No. 12,963

Claims priority, application United Kingdom, Dec. 12, 1977, 51684/77; Dec. 12, 1977, 51685/77

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—633 **6 Claims**



1. In combination:

first digital means for dividing the duration of a period of a time-varying predetermined smooth waveform into n equal elemental time intervals, where n is a first given plural integer, and counting the respective occurrences of said elemental time intervals; and

second digital means including a read-only-memory coupled to said first digital means and responsive to the counts of said elemental time intervals, said read-only-memory being organized to generate digital outputs in accordance with a histogram of said predetermined smooth waveform in which the peak-to-peak amplitude of said waveform is divided into m levels, where m is a second given plural integer smaller than said first given plural integer, and the amplitude increment between each and every pair of adjacent ones of said m levels is the same, said second digital means including output means for generating an output pulse in time coincidence with a change in level of said histogram.

4,258,577

GYROSCOPIC APPARATUS

Colin H. J. Fox, Newcastle-upon-Tyne, and James S. Burdess, Whitley Bay, both of England, assignors to National Research Development Corporation, London, England

Filed Feb. 23, 1979, Ser. No. 14,531

Claims priority, application United Kingdom, Feb. 27, 1978, 07702/78

Int. Cl.³ G01C *19/28, 19/56*

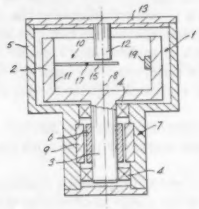
U.S. Cl. 74—5.6 R **9 Claims**

1. Gyroscopic apparatus including:

a drive member, adapted to rotate about a drive axis;

a sensitive element attached to said drive member,

said sensitive element comprising a sprung mass system including spring members and having its centre of mass offset from said drive axis, said spring members extending away from the points of said attachment of said sprung mass system to said drive member in directions having a radially-inwards component relative to said drive axis and being free to permit vibration of said element in a direction parallel to said drive axis, and



means to detect said vibration and convert it to gyroscopically-useful signals.

4,258,578

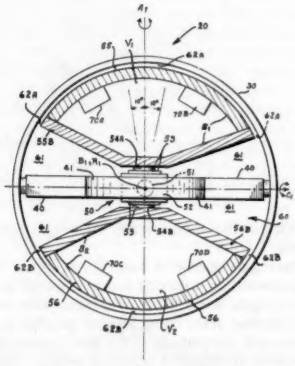
FLOATED, INTERNALLY GIMBALLED PLATFORM ASSEMBLY

John M. Kennel, Santa Ana, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 6, 1978, Ser. No. 913,160

Int. Cl.³ G01C *19/20;* F16M *11/12*

U.S. Cl. 74—5.34 **4 Claims**



1. A floated, internally gimballed stable platform assembly, in combination with a rigid structure, for use in stabilizing a plurality of inertial instruments, comprising:

a. an outermost first gimbal member in the shape of a hollow sphere, made of fluid-impervious material, having an external surface that is intersected at two diametrically opposed points thereon by a horizontal axis, wherein said first gimbal member is rotatably secured to, and is mounted on, said rigid structure at each of said two points, such that said first gimbal member is rotatable about its horizontal axis;

b. an inner second gimbal member, essentially in the shape of a yoke, having a horizontal axis perpendicular to, and co-planar with, said horizontal axis of said first gimbal member, wherein said second gimbal member is disposed internal of, and directionally inward of, and is rotatably secured to and mounted on, said first gimbal member, such that said second gimbal member is rotatable about its own horizontal axis;

c. a gimballed stable platform subassembly disposed internal of said first gimbal member and directionally inward of said second gimbal member, wherein said subassembly has a vertical axis that is perpendicular to, and co-planar with,

said horizontal axis of said second gimbal member, and wherein said subassembly comprises:

(1) a first component having a horizontal axis coincident with said axis of said first gimbal member and pivotally mounted within said yoke-shaped second gimbal member;

(2) a second component connected to said first component, mounted within said yoke-shaped second gimbal member, and pivotable around said coincident axes of said first gimbal member and of said first component;

(3) a third component, essentially in the shape of a shaft, connected to said second component, and having a first end and a second end, wherein said third component is dimensioned, configurated, and positioned such that it is rotatable around said vertical axis of said stable platform subassembly, and such that it is also pivotable around said horizontal axis of said first gimbal member;

(4) a fourth component which further comprises a first spherical shell segment made of fluid-impervious material, and a first truncated conical shell made of fluid-impervious material, that are joined to define and limit a first enclosed hollow volume having an inside surface to which some of said inertial instruments may be mounted, wherein said fourth component is disposed such that said first truncated conical shell is adjacent to, is secured to, and is mounted on said first end of said third component, and also such that said first spherical shell segment is positioned concentric with said first gimbal member, whereby a gap is formed between said first spherical shell segment and said first gimbal member;

(5) and, a fifth component which further comprises a second spherical shell segment made of fluid-impervious material, and a second truncated conical shell made of fluid-impervious material, that are joined to define and limit a second enclosed hollow volume having an inside surface to which some other of said inertial instruments may be mounted, wherein said fifth component is disposed such that said second truncated conical shell is adjacent to, is secured to, and is mounted on said second end of said third component, and also such that said second spherical shell segment is positioned concentric with said first gimbal member, whereby a gap is formed between said second spherical shell segment and said first gimbal member;

d. and, means for maintaining said stable platform subassembly in a floating position, whereby any bending moments on said third component of said stable platform subassembly are eliminated.

4,258,579

GYROSCOPE WHEEL SPEED MODULATOR

Guy R. Olbrechts, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 19, 1977, Ser. No. 861,898

Int. Cl.[2] G01C *19/04*

U.S. Cl. 74—5.37 **25 Claims**

1. A gyroscope wheel speed modulator for producing a signal suitable for controlling the frequency of the power applied to a gyro so as to compensate for movement of the gyro case about the spin axis of the gyro and, thereby, maintain the spin rate of the seismic mass of the gyro constant in inertial space, said gyroscope wheel speed modulator comprising:

high frequency oscillator means for producing a high frequency signal having a frequency value lying in a very narrow band about a nominal high frequency;

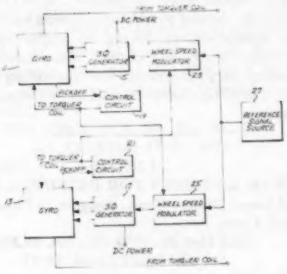
divider means connected to said high frequency oscillator means for dividing down the signal produced by said high frequency oscillator means, said divider means producing first and second output signals, said first output signal being a low frequency signal lying several decades below the frequency of the signal produced by said high frequency oscillator means and said second output signal being an intermediate frequency signal having a frequency lying between the frequency of the signal produced by said high frequency oscillator means and the frequency of said first output signal, said intermediate frequency signal suitable for controlling the frequency of power to be applied to a gyro to rotate the seismic mass the gyro;

reference signal means for producing a highly accurate and stable low frequency signal;

phase comparator means connected to said divider means and to said reference signal means for receiving said first output signal produced by said divider means and said highly accurate and stable low frequency signal produced by said reference signal means, said phase comparator means comparing said first output signal produced by said divider means and said highly accurate and stable low frequency signal produced by said reference signal means and producing, in accordance therewith, a low ripple output signal having a magnitude related to the phase difference between said first output signal produced by said divider means and said highly accurate and stable low frequency signal produced by said reference signal means;

loop filter means connected to said phase comparator means for receiving the output of said phase comparator means; and,

summing means having a first input connected to receive the output of said loop filter means and a second input adapted to receive a spin axis angular rate signal having a magnitude related to the rate of movement of the gyro case of the gyro whose power frequency is to be controlled about



the spin axis of said gyro, said summing means summing its input signals and producing an output signal in accordance therewith, said output signal connected to said frequency oscillator means for controling the frequency of the signal produced by said high frequency oscillator means.

17. In a gyroscope system including at least two gyroscopes, one of said gyroscopes including a sense axis positioned so as to sense rotational movement about the spin axis of the other gyroscope and the other gyroscope including a sense axis positioned so as to sense rotational movement about the spin axis of the first gyroscope, the improvement comprising a gyroscope wheel speed modulator associated with each of said gyroscopes for controlling the frequency of the power applied to said gyroscopes so as to compensate for movement of the cases of the gyroscopes about the spin axes of the gyroscopes and, thereby, maintain the spin rate of the seismic mass of the gyroscopes constant in inertial space, said gyroscope wheel speed modulators each comprising:

a high frequency oscillator means for producing a high frequency signal having a frequency value lying in a very narrow band about a nominal high frequency;

divider means connected to said high frequency oscillator means for dividing down the signal produced by said high frequency oscillator means, said divider means producing first and second output signals, sai.. first output signal being a low frequency signal lying several decades below the frequency of the signal produced by said high fre-

quency oscillator means and said second output signal being an intermediate frequency signal having a frequency lying between the frequency lying between the frequency of the signal produced by said high frequency oscillator means and the frequency of said first output signal, said intermediate frequency signal connected to control the frequency of power applied to one of said gyros, to rotate the seismic mass of that gyro;

reference signals means for producing a highly accurate and stable low frequency signal;

phase comparator means connected to said divider means and to said reference signal means for receiving said first output signal produced by said divider means and said highly accurate and stable low frequency signal produced by said reference signal means, said phase comparator means comparing said first output signal produced by said divider means and said highly accurate and stable low frequency produced by said reference signal means and producing, in accordance therewith, a low ripple output signal having a magnitude related to the phase difference between said first output signal produced by said divider means and said highly accurate and stable low frequency signal produced by said reference signal means;

loop filter means connected to said phase comparator means for receiving the output of said phase comparator means; and,

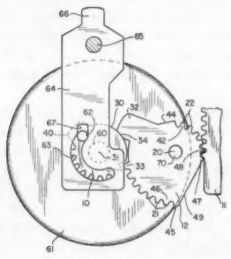
summing means having a first input connected to receive the output of said loop filter means and a second input adapted to receive a signal from the other gyro having a magnitude related to the rate of movement of the gyro case of the gyro whose power frequency is to be controlled about the spin axis of said gyro, said summing means summing its input signals and producing an output signal in accordance therewith, said output signal connected to said frequency oscillator means for controlling the frequency of the signal produced by said high frequency oscillator means.

4,258,580

GEAR ASSEMBLY FOR DRIVING A RACK

Lynnwood Lowe, Darien, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 30, 1979, Ser. No. 89,350
Int. Cl.³ F16H *21/44, 55/17*
U.S. Cl. 74—109 **8 Claims**



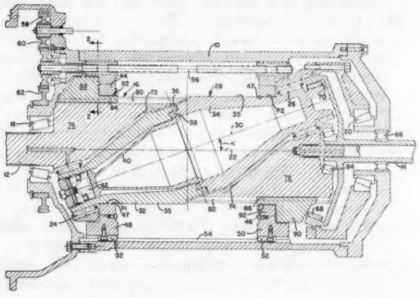
1. A gear assembly comprising a driving pinion gear, a rack, and an intermediate gear having first and second opposite segments of teeth engaging the teeth of said pinion and the teeth of said rack respectively, the teeth of said driving gear, rack and intermediate gear having substantially the same pitch, the axis of rotation of the intermediate gear being closer to the pitch line of the rack than to the pitch circle of the pinion, whereby the radii of curvature of the teeth of the first and second segments of the intermediate gear are different, the index number of the teeth of the first and second segments of the intermediate gear being non-integrally related to the circumference of the respective pitch circles.

4,258,581

COUNTERBALANCING SYSTEM FOR NUTATIONAL TRACTION DRIVE TRANSMISSIONS

Yves J. Kemper, and Harvey N. Pouliot, both of Birmingham, Mich., assignors to Vadetec Corporation, Troy, Mich.

Filed Sep. 21, 1979, Ser. No. 77,780
Int. Cl.³ F16H *15/16*
U.S. Cl. 74—192 **7 Claims**



1. In a continuously variable transmission unit including an alpha body rotatable on a first axis and drivably connected with a unit input, a beta body having a pair of beta rolling surfaces of revolution about a second axis, said beta body being carried by said alpha body so that said second axis is inclined with respect to and intersecting said first axis at a point of axes intersection, said beta body being rotatable on said second axis, and an omega body defining a pair of omega rolling surfaces of revolution about said first axis, one of said beta and omega rolling surfaces being of variable radii whereas the other of said rolling surfaces is of relatively constant radius, said rolling surfaces being in frictional engagement at each other at two diametrically opposite contact points located on opposite sides of said point of axes intersection, and means for adjusting the position of said contact points to vary the ratio of said rolling surface radii and the speed at which said beta body rotates about said second axis, the improvement comprising:

a pair of counterweights movably supported by said alpha body to be variably positioned diametrically opposite from said points of contact; and

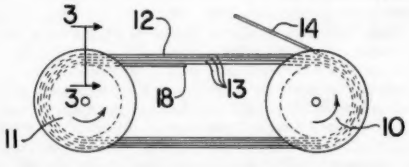
means for adjusting the position of said counterweights in accordance with variations in the rotational speed of said beta body about said second axis in a fixed frame of reference.

4,258,582

EMERGENCY DRIVE BELT AND METHOD FOR MAKING THE SAME

Gerald C. Hollaway, Jr., Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Mar. 8, 1979, Ser. No. 18,683
Int. Cl.³ F16G *1/26*
U.S. Cl. 474—254 **8 Claims**



1. A drive belt comprising at least one ribbon of cured elasto-

meric material extending repeatedly along the length of said belt to form a plurality of layers with adjacent layers being bonded together with a bonding medium, wherein said cured elastomeric material has a tensile strength in the approximate range of 3,800 to 4,500 psi., a modulus of elasticity in the approximate range of 1,800 to 2,400 psi. at 200% elongation and a compression set of about 15 to 25%.

4,258,583

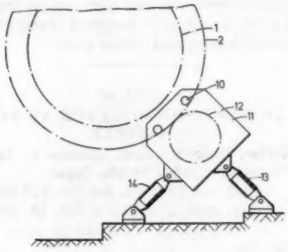
DRIVE MECHANISM FOR ROTARY DRUM

Hermann Weiss, Kaarst, Fed. Rep. of Germany, and Ernst Stockhammer, Linz, Austria, assignors to Atec-Weiss KG, Kaarst, Fed. Rep. of Germany and Vereinigte Osterreichische Eisen- und Stahlwerke Alpin Montang Aktiengesellschaft, Linz, Austria

Filed Nov. 13, 1978, Ser. No. 960,482

Int. Cl.³ F16H *55/17, 57/00*

U.S. Cl. 74—414 **8 Claims**



1. A drive mechanism for a rotary drum comprising a toothed ring disposed on the outer periphery of said drum and having a clearance in relation to said drum,

a drive pinion meshing with said toothed ring,

a cylindrical support arranged concentrically to and with a clearance from said drum, said toothed ring being secured to said cylindrical support,

mutually spaced circumferential portions of said cylindrical support being respectively secured to the drum and to said toothed ring,

said support being eleastically flexible whereby the toothed ring is able to move radially of the drum with flexure of said support,

guide and support elements for holding said toothed ring in mesh with said drive pinion, said guide and support elements being disposed at the same radial distance from the drive pinion axis but which are angularly spaced about said axis and bear on an inner peripheral surface of said toothed, and

said drive pinion and said guide and support elements are disposed in a housing which is supported by means arranged to cushion radial and tangential forces thereon.

4,258,584

BALL CIRCULATION SCREW GEAR

Gerhard Haegele, Hohenstadt, and Helmut Knoedler, Schwabisch Gmund, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Sep. 12, 1978, Ser. No. 941,662

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1977, 2741333

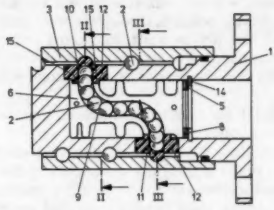
Int. Cl.³ F16H *29/20*

U.S. Cl. 74—424.8 R **10 Claims**

1. In a worm gear of the kind comprising a helically channeled ball nut (3) encompassing a helically circumferentially channeled worm screw (1) and having an intermediate ball chain (2) whereby rotation of said worm screw reciprocates said ball nut;

the improvement which comprises a ball return member (4) within said worm screw having a raceway for a ball chain comprising radially disposed inlet and outlet channels (10, 11) with openings for connection with respective apertures through said worm screw;

said raceway comprising a ball chain channel (9) in said ball return member connecting said inlet channel with said outlet channel;



said raceway being in a median plane of said ball return member;

including respective ball guide bushings (12) in said return member disposed at said inlet and outlet openings and channeled for transition of ball movement between radial and circumferential channels of said ball return member and said worm screw, respectively.

4,258,585

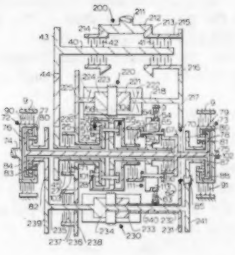
FOUR-RANGE HYDROMECHANICAL TRANSMISSION WITH HYDROSTATIC STEERING MODULE

Elias Orshansky, Jr., deceased, late of San Francisco, Calif. (by Betty B. Orshansky, executrix), and William E. Weseloh, San Diego, Calif., assignors to Orshansky Transmission Corporation, New York, N.Y.

Filed May 2, 1978, Ser. No. 902,216

Int. Cl.³ F16H *47/04, 1/44*

U.S. Cl. 74—687 **17 Claims**



1. A hydromechanical transmission, with a hydrostatic starting range, for track-laying vehicles and the like, including in combination:

a main frame,

first, second, third, fourth, and fifth planetary assemblies, each having one sun gear, one ring gear, and one planet carrier with planet gears,

an input shaft having an input bevel gear in engagement with both a forward bevel gear and a reverse bevel gear, said forward bevel gear being mounted on a first hollow shaft having another gear thereon,

a first driven shaft coaxial with said first hollow shaft, having a drive gear thereon,

a first clutch for clutching said driven shaft to said forward bevel gear,

a second clutch for clutching said driven shaft to said reverse bevel gear,

a hydrostatic driving module having a variable-stroke hy-

draulic unit on a shaft having a gear in mesh with the other gear of said first hollow shaft, said module also having a fixed-stroke hydraulic unit hydraulically connected to said variable-stroke hydraulic unit, so that when one unit acts as a pump, the other unit acts as a motor, and vice versa,

a second hollow shaft in driving relation with said fixed-stroke hydraulic unit and carrying rigidly the sun gear of said first planetary assembly,

a third hollow shaft coaxial with said second hollow shaft and in driving relation, through an idler gear with the gear on said first driven shaft, said third hollow shaft being rigidly connected to the ring gear of said first planetary assembly and the carrier of said second planetary assembly,

a third clutch for releasably clutching together said second and third hollow shafts,

a fourth hollow shaft coaxial with said second and third hollow shafts and rigidly connected to the sun gears of both said second and third planetary assemblies,

a second driven shaft coaxial with said second, third, and fourth hollow shafts and rigidly connected to the carrier of said third planetary assembly and carrying at one end the ring gear of said fourth planetary assembly and at the other end the ring gear of said fifth planetary assembly,

a fourth clutch for releasably clutching together the carriers of said first and third planetary assemblies, the carrier of said first planetary assembly being rigidly connected to the ring gear of said second planetary assembly,

a fifth clutch for releasably clutching together said sun and said carrier of said third planetary assembly,

a first brake for holding the ring gear of said third planetary assembly stationary relative to said frame,

a first output shaft rigidly connected to the carrier of said fourth planetary assembly,

a second output shaft rigidly connected to the carrier of said fifth planetary assembly,

a hydrostatic steering module having a variable-stroke hydraulic unit and a fixed-stroke hydraulic unit hydraulically connected together so that when one unit serves as a pump the other one serves as a motor and vice versa, its variable-stroke hydraulic unit being connected to a gear in mesh with the gear on the shaft of the variable-stroke hydraulic unit of said driving module,

a first gear train connecting the fixed hydraulic unit of said steering module to the sun gear of said fourth planetary assembly,

a second gear train connecting the fixed hydraulic unit, through an idler, to the sun gear of said fifth planetary assembly,

a second brake for holding the first output shaft stationary relative to said frame, and

a third brake for holding the second output shaft stationary relative to said frame.

4,258,586

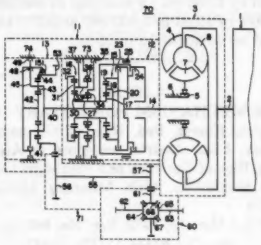
COMPACT TRANSMISSION FOR USE IN AUTOMOBILES

Akio Numazawa, Nagoya; Seitoku Kubo, Toyota; Koujiro Kuramochi, Toyota, and Tatsuo Kyushima, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 7, 1979, Ser. No. 18,275
Claims priority, application Japan, May 19, 1978, 53-58824
Int. Cl.[3] F16H *37/08*
U.S. Cl. 74—695 **12 Claims**

1. In a compact vehicular transmission including coaxial, operatively interconnected underdrive and overdrive units each having output and input elements, an intermediate shaft operatively interconnecting the underdrive unit output element with the overdrive unit input element and output gear axially disposed and mounted for rotation between the underdrive and overdrive units and being driven by the overdrive unit output element and driving a shaft parallel to the intermediate shaft transmitting power to a final reduction gear, the improvement comprising:

an axial extension member integral with the overdrive unit



input element and spline-coupled at its inner periphery to the outer periphery of said intermediate shaft; and

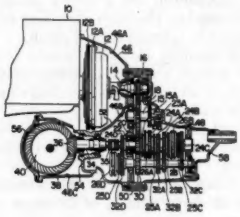
bearing means on the outer periphery of said extension member for supporting said output gear.

4,258,587

POWER TRANSMISSION UNIT FOR AN AUTOMOTIVE VEHICLE

Hideki Morino, Nagoya, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 14, 1978, Ser. No. 877,767
Claims priority, application Japan, Feb. 14, 1977, 52-14788
Int. Cl.[3] F16H *37/08*
U.S. Cl. 74—700 **5 Claims**



1. A power transmission unit for an automotive vehicle having an engine, said unit comprising:

a disengageable coupling means having a power output shaft extending coaxially with and disengageably coupled to a crankshaft of an engine;

a change speed gearing including a main shaft and a counter shaft both disposed downwardly from and in parallel with said power output shaft, and change speed gear trains carried on said main and counter shafts and arranged rearwardly downwardly from said coupling means;

said counter shaft being disposed in parallel with and spaced laterally from said main shaft;

means for operatively coupling said power output shaft to said change speed gearing;

said operatively coupling means including:

a drive gear integrally mounted on said power output shaft,

an idler shaft disposed below said power output shaft,

an idler gear mounted on said idler shaft and being in constant mesh with said drive gear,

an input gear mounted on said main shaft below said idler shaft and being in constant mesh with said idler gear, and

a counter shaft drive gear mounted on said counter shaft and being in constant mesh with said input gear;

a drive pinion shaft disposed immediately below said disen-

gageable coupling means and having a front end and having a rear end which is coupled to said main shaft; and

a final drive including a drive pinion carried on said front end of said drive pinion shaft and a ring gear constantly in mesh with said drive pinion, said final drive being disposed below said engine adjacent to the front end of said disengageable coupling means;

said drive gear, said idler gear, said input gear and said counter shaft drive gear all lying in the same transverse plane,

said change speed gear trains being disposed rearwardly from said transverse plane.

4,258,588

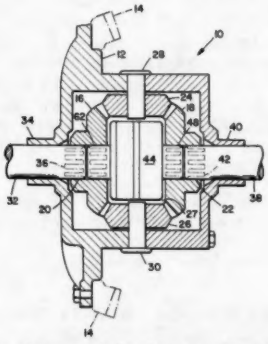
DIFFERENTIAL TRANSMISSION WITH LIMITED TORQUE TRANSMITTER

Robert S. Yum, 781 La Alondra Way, Gilroy, Calif. 95020

Filed Mar. 16, 1979, Ser. No. 20,974

Int. Cl.³ F16H *1/44*

U.S. Cl. 74—710.5 **4 Claims**



1. A differential transmission for controlling the rotational speed of a pair of wheels, comprising:

(a) a first rotatable casing having a pair of hubs;

(b) a pair of pinion gears coupled to said first casing:

(c) a pair of side gears having openings therethrough and being in meshing engagement with said pinion gears;

(d) a pair of wheel axles extending, respectively, through said hubs and into said openings in meshing engagement with said side gears; and

(e) a rotary pump including a second rotary casing forming a pair of fluid cylinders and having a first fluid inlet and a first fluid outlet in fluid communication with one of said cylinders, a second fluid inlet and a second fluid outlet in fluid communication with the other of said cylinders, a rotary shaft having a pair of blades, one of said blades extending within said one cylinder and the other of said blades extending within said other cylinder, said second casing extending into one of said openings and being in meshing engagement with one of said side gears and said shaft extending into the other of said openings and being in meshing engagement with the other of said side gears.

4,258,589

PLANETARY ADJUSTER

Wallace F. Mitchell, Mettawa, Ill., assignor to Liquid Controls Corporation, North Chicago, Ill.

Filed Sep. 21, 1978, Ser. No. 944,407

Int. Cl.³ F16H *15/50*

U.S. Cl. 74—796 **8 Claims**

1. An infinitely variable planetary transmission comprising

a generally tubular housing member adapted to be fixedly mounted to a support

a generally tubular adjustment member threadedly telescoped to said housing member for adjustable axial movement relative to said housing member,

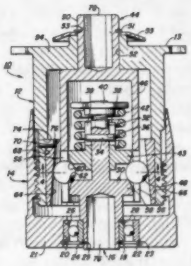
a first ball drive member journaled in an axial bore in said adjustment member and extending into said housing member,

means restraining said first drive member against axial movement relative to said adjustment member,

said first ball drive member having an external first annular race surface,

a second ball drive member mounted to said first drive member for longitudinal movement relative thereto and having an external second annular race surface,

means preventing relative angular movement between said first and second drive members, a ball cage journaled for rotation in an axial bore in said housing member,



at least three balls carried at equally spaced apart positions in said cage and positioned in engagement with said annular race surfaces,

spring means connected between said first and second drive members for exerting a force urging said annular race surfaces into engagment with said balls, and

an outer race carried by said housing and having an internal frusto-conical annular race surface engaging said balls,

whereby relative rotation between said adjustment member and said housing member axially moves said first and second drive members relative to said outer race to change the drive ratio between said first drive member and said ball cage.

4,258,590

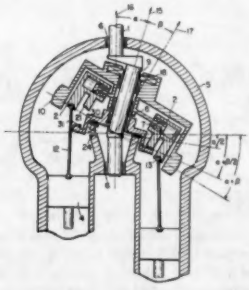
WOBBLE PLATE CONTROL FOR A VARIABLE PISTON DISPLACEMENT MACHINE

Roelf J. Meijer, Ann Arbor, and Benjamin Ziph, Ypsilanti, both of Mich., assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 3, 1979, Ser. No. 63,645

Int. Cl.³ F16H *35/08*

U.S. Cl. 74—839 **5 Claims**



1. In a variable displacement wobble plate drive machine

having a frame; a shaft mounted for rotation about a shaft axis in the frame; a support member defining a driving axis arranged to intersect the shaft axis at a common point, said support member mounted for rotation with the shaft; means for varying the angle between the driving axis and the shaft axis; a wobble plate; and means connecting the wobble plate to the support member for wobbling movement of the plate responsive to the wobble of the driving axis as the shaft rotates, an improved wobble plate restraint mechanism wherein

the support member is mounted for rotation about a tilted axis which intersects the shaft axis at said common point at a first acute angle, and

the mechanism further comprises an element fixed to the frame and having a fixed conical surface arranged symmetrically about the shaft axis,

an idler element mounted for rotation about the shaft on the tilted axis, having a first conical surface arranged symmetrically about said tilted axis and engaging said fixed conical surface for rolling movement of the first conical surface on the fixed conical surface as the shaft rotates, thereby forming a constant velocity coupling from the idler element to the frame; and a second conical surface arranged symmetrically about the tilted axis, and

a wobble plate conical surface engaging said second conical surface for rolling movement of the wobble plate conical surface on the second conical surface as the angle between the driving axis and the shaft axis is varied, and the apices of said conical surfaces being disposed at said common point, thereby forming a constant velocity coupling from the wobble plate to the frame.

4,258,591

APPARATUS FOR CONTROLLING GEAR SHIFTS IN AUTOMATIC TRANSMISSIONS

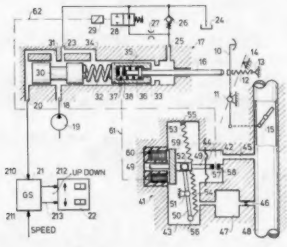
Konrad Eckert, Stuttgart; Helmut Espenschied, Ludwigsburg; Georg Rothfuss, Sonthofen/Hüttenberg, and Alexander Witte, Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 9, 1978, Ser. No. 932,173

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1977, 2738914

Int. Cl.[3] **B60K** *41/06, 41/08*

U.S. Cl. 74—866 **16 Claims**



1. An apparatus for controlling the shifting characteristics of stepped automatic transmissions for motor vehicles, said automatic transmissions including a transmission unit, a fluid or electrical transmission control unit and means for providing a variable fluid or electrical input signal to the transmission control unit based on the degree of depression of the accelerator pedal, and comprising

means including differential means (**42**, **43**, **45**, **46**, **47**; **81**; **103**) for sensing abrupt release of the accelerator pedal from a previously depressed position;

and switching means coupled to and controlled by said sensing means connected to the transmission control unit when the sensing means sense that the accelerator pedal is being abruptly released, said switching means inhibiting upshift of the transmission upon response of the sensing means.

4,258,592

DEVICE FOR SHARPENING OF SCISSORS

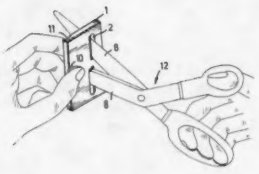
Erkki O. Linden, Billnäs, Finland, assignor to OY. Fiskars AB, Helsinki, Finland

Filed May 25, 1979, Ser. No. 42,483

Claims priority, application Finland, Jun. 6, 1978, 781801

Int. Cl.[3] **B21K** *11/06*

U.S. Cl. 76—82.2 **4 Claims**



1. A device for sharpening of scissors, said device consisting of a body (**1**) and of sharpening means (**4,5**) in the shape of substantially round pins with smooth surface fastened onto the body at a certain angle (α) in relation to each other and arranged so as to be slidingly moved along the inside (**6**) and outside (**7**) of the cutting edge (**9**) of a scissors' blade (**8**), characterized in that the device comprises two pairs of sharpening means (**4,5**) positioned at an angle, one pair for each scissors' blade (**8**), and that the active faces of the sharpening means (**4**) that process the inside (**6**) of the cutting edges (**9**) are placed substantially in line with each other.

4,258,593

METHOD FOR REDUCING VIBRATIONS IN WEB CUTTING BLADES

Hannu Oinonen, Järvenpää, Finland, assignor to Oy Wartsila Ab, Helsinki, Finland

Filed Dec. 1, 1978, Ser. No. 965,566

Claims priority, application Finland, Dec. 13, 1977, 773752

Int. Cl.[3] **B26D** *1/14*

U.S. Cl. 76—101 A **11 Claims**

2. In a method for reducing vibrations in a disc cutter assembly formed from two relatively thin light rotating disc cutters each having a smooth peripheral cutting edge, said disc cutters being arranged adjacent to each other for cutting a running web of soft material such as paper, said method including the steps of

making at least one of said disc cutters cup-shaped with a convex side and a concave side,

coating said concave side of the cutter, at least partly, with a layer having substance components with a high internal friction,

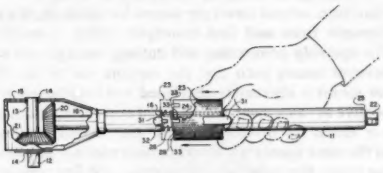
said coating layer including tough plastic mixed with metal powder.

4,258,594

SOCKET WRENCH WITH AUXILIARY DRIVE

Herbert E. Welch, Manchester, Ga., assignor to Frederick A. Shenton, Warms Springs, Ga.

Filed Jun. 25, 1979, Ser. No. 51,907
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.29 **5 Claims**



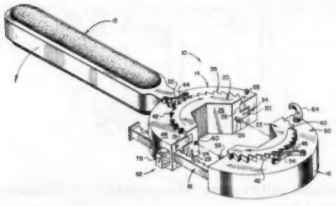
1. A socket wrench having a tubular handle, an angularly disposed stud and means for rotating the stud relative to the handle, said means including a drive wheel operatively connected to the stud and journaled for rotations relative to the handle by the thumb of an operator's hand grasping the wrench, means for selectively locking the drive wheel against rotation relative to the handle, and said last-named means comprising means mounting the drive wheel for limited axial movement along the handle, an irregular surface on one end of the drive wheel and a correspondingly shaped surface on a proximal portion of the handle, whereby the drive wheel may be selectively moved into and out of locking engagement with the handle.

4,258,595

HIGH TORQUE SECTIONAL SOCKET RATCHET WRENCH

Marvin L. Ramsey, 213 Mounts, Apt. 3, Denton, Tex. 76201

Filed Dec. 26, 1979, Ser. No. 106,558
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—61 **3 Claims**



1. A wrench usable where limited access normally requires an open end wrench, but having the high torque capacity of a closed end, or socket wrench, comprising:

an elongated handle;

a first socket holder formed on one end of said handle, said first socket holder having a curved opening;

a second socket holder having a curved opening;

a straight ratchet bar releasably coupling the first and second socket holders for extension and retraction between closed and open positions relative to each other;

first and second socket segments each having a curved head coupled in rotational engagement with the curved opening of the first and second socket holders, respectively, and each curved head having interior wrench land surfaces which in combination define a polygonal opening;

a curved ratchet carried by at least one of said socket segments; and,

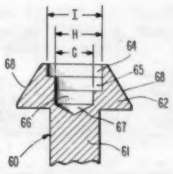
a pawl mechanism mounted on one of said socket holders and resiliently biased in engagement with said curved ratchet allowing it to turn in one direction only, and preventing rotation of said ratchet in the opposite direction.

4,258,596

TAMPER-RESISTANT FASTENER

Robert H. Bisbing, Springfield, and William R. Frame, Brookhaven, both of Pa., assignors to Southco, Inc., Concordville, Pa.

Continuation of Ser. No. 870,372, Jan. 18, 1978, abandoned, which is a continuation-in-part of Ser. No. 816,896, Jul. 18, 1977, abandoned. This application Apr. 23, 1979, Ser. No. 32,212
Int. Cl.³ F16B *23/00*; B25B *13/48*
U.S. Cl. 81—436 **13 Claims**



1. A tamper-resistant torque-responsive fastener comprising a shank and a head;

a. said head having a peripheral sidewall adapted to prevent the application of torque to said head which will be effective on the shank;

b. said head having first, second and third sockets each of circular cross section, said sockets having respectively first, second and third diameters each different from the other;

c. said first diameter being larger than said second diameter, said second diameter being larger than said third diameter;

d. said second socket extending below the bottom of said first socket, said third socket extending below the bottom of said second socket;

e. said first and third sockets each having a center axis which is concentric relative to the center axis of the fastener head;

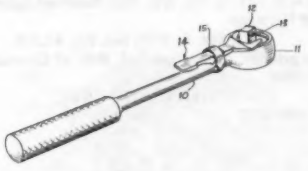
f. said second socket having a center axis which is eccentric relative to the center axis of said fastener head.

4,258,597

SOCKET WRENCH EJECTOR

Alan H. Gelman, 8223 Calle Calzada, San Diego, Calif. 92126

Filed Jun. 25, 1979, Ser. No. 51,365
Int. Cl.³ B25B *23/00*
U.S. Cl. 81—184 **2 Claims**



1. An ejector lever for use on a wrench having a shaft and a head housing a square socket drive, said ejector lever comprising an elongated lever having at one end a flat open-ended fork adapted to surround the square-drive at its base and under an attached socket, a fulcrum resting on the shaft of the wrench at the mid-point of the lever such that depression of the opposite lever end will lift the fork end and thereby release the socket from its detent, and means for securing the lever to the wrench shaft and returning it to initial position after actuation, said means comprising a laterally-cut retaining groove in said shaft

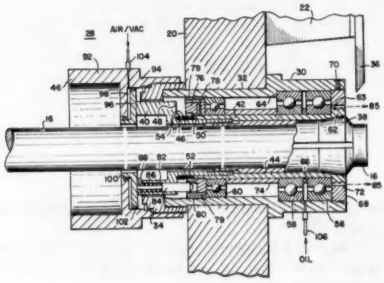
and a spring band encircling said lever and shaft and releasably retaining said fulcrum in said groove such that said lever can be alternatively snapped out of said groove and slid axially along said shaft free of said head, or operatively positioned with said fulcrum engaged in said groove.

4,258,598

ROTATING GUIDE BUSHING FOR SWISS-TYPE AUTOMATIC SCREW MACHINE

George T. Hoffmann, Pittsford, N.Y., assignor to Alkron Manufacturing Corp., Rochester, N.Y.

Filed Jun. 11, 1979, Ser. No. 47,427
Int. Cl.³ B23B *25/00, 13/00*
U.S. Cl. 82—38 R **12 Claims**



1. For use in a Swiss-type screw machine having a bracket through which stock can move axially while being rotated, an arrangement for holding and guiding said stock in said bracket which comprises

guide means having a passage therethrough for said stock, said guide means being rotatably mounted in said bracket,

means rotatable with said guide means for clamping said guide means against said stock with sufficient force to cause said guide means and clamping means to rotate with said stock and to permit said stock to move axially with respect to said guide means,

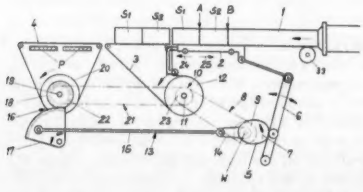
said spring means comprising at least one "O" ring of elastomeric material and said clamping means comprising means attached to said cylindrical member for compressing said "O" ring to apply said sufficient force to said one end of said cylindrical member.

4,258,599

METHOD AND APPARATUS FOR TRANSPORTING CUT BRICK ELEMENTS TO A TRANSFER STATION

Dieter Keck, Ibbenbueren, Fed. Rep. of Germany, assignor to C. Keller G.m.b.H. u. Co. KG, Ibbenbueren-Laggenbeck, Fed. Rep. of Germany

Filed Jun. 8, 1979, Ser. No. 47,264
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1978, 2839984
Int. Cl.³ B26D *7/06*
U.S. Cl. 183—112 **12 Claims**



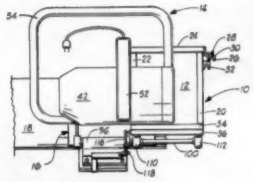
1. Apparatus for transporting brick elements cut from a continuous advancing ribbon of brick-forming material comprising a cutting carriage for receiving said continuous advancing ribbon, means for reciprocating said carriage in advance and return directions, said cutting carriage moving in said advance direction at the same speed as the advancing ribbon, cutting means for cutting brick elements from the leading end portion of said advancing ribbon on said cutting carriage, first conveyor means for receiving said cut brick elements from said cutting carriage, second conveyor means for receiving the cut brick elements from said first conveyor means, connecting means for operably connecting said cutting carriage and said first conveyor means such that the support run of the first conveyor means is alternately shortened and lengthened with the respective advancement and return of said cutting carriage, and drive means for driving said first and second conveyor means at the same speeds while said cutting carriage advances, said drive means also being adapted to drive said first conveyor means at the same speed as the speed of advancement of said ribbon while said cutting carriage moves in said return direction, said second conveyor means being stationary while said cutting carriage moves in said return direction.

4,258,600

VARIABLE UTILITY CHAIN SAW APPARATUS

Edward L. Jackson, Pauls Valley, Okla. 73075

Continuation-in-part of Ser. No. 741,716, Nov. 16, 1976, Pat. No. 4,127,046. This application Nov. 8, 1978, Ser. No. 958,932
The portion of the term of this patent subsequent to Nov. 28, 1995, has been disclaimed.
Int. Cl.³ B27B *17/08*
U.S. Cl. 83—574 **10 Claims**



1. A variable utility chain saw apparatus comprising:

a mounting frame;

a slotted mounting plate removably carried on the mounting frame;

a chain saw secured to the mounting plate and removable from the mounting frame with the mounting plate and including:

a saw blade guide plate projecting through the slot in the mounting plate;

a motor connected to the guide plate and located on one side of the mounting plate;

a saw blade drivingly connected to the motor and extending around the guide plate at a location at which substantially all of the saw blade is on the opposite side of said mounting plate from said motor; and

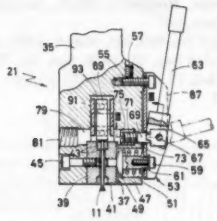
a chain saw guard subassembly pivotally mounted on one side of the mounting plate, and projecting over the saw blade; and

a supporting assembly connected to the mounting frame and adapted for quick-detachable securement to a stabilizing structure of stabilize the saw during cutting.

4,258,601
BANDSAW BLADE GUIDING APPARATUS FOR BANDSAW MACHINES

Hiromichi Tanabe, Hadano, Japan, assignor to Amada Company, Limited, Isehara, Japan

Filed Sep. 17, 1979, Ser. No. 76,168
Claims priority, application Japan, Sep. 16, 1978, 53-126065[U]
Int. Cl.³ B23D *55/08*; B27B *13/10*; B26D *1/54*
U.S. Cl. 83—820 **4 Claims**

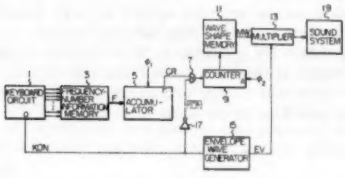


1. In a bandsaw machine having a bandsaw blade frictionally guided between a pair of opposed guide members, one of said guide members being urged toward the other of said guide members by resilient means coactively associated with support means, the force exerted on said one guide member by said resilient means being variable by positionally adjusting said support means, the improvement comprising: said support means being pivotally mounted and being urged by said resilient means into contact with a lever-actuated rotatable cam, with rotation of said cam resulting in the aforesaid positional adjustment of said support means.

4,258,602
ELECTRONIC KEYBOARD MUSICAL INSTRUMENT OF WAVE MEMORY READING TYPE

Koji Niimi, and Mitsumi Kotah, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Jul. 7, 1978, Ser. No. 922,756
Claims priority, application Japan, Jul. 12, 1977, 52/82609
Int. Cl.³ G10H *1/08, 5/00, 7/00*
U.S. Cl. 84—1.01 **16 Claims**

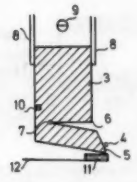


1. An electronic keyboard instrument, comprising:
a keyboard having a plurality of keys;
a keyboard circuit connected to said keyboard and generating a key identity output signal indicating which of said keys is being operated each time at least one of said keys is operated;
a waveshape memory storing a desired waveshape in the form of a plurality of sample values, each of said sample values being stored in a respective address location of said memory, said waveshape memory generating that sample value stored in the address location addressed by an address signal applied thereto;
a read-out circuit coupled to said waveshape memory and applying a set sequence of address signals to said memory at a constant frequency, said read-out circuit reinitiating the application of said set sequence of address signals to said waveshape memory each time a reset signal is applied thereto;
a reset signal generator circuit receiving said key identity output signals and applying reset signals to said read-out circuit with a period which varies as a function of the tone pitch associated with the key being operated;
a sound system for generating acoustic tones which vary as a function of said sample values generated by said waveshape memory.

4,258,603
PLUCKING MECHANISM FOR A STRINGED INSTRUMENT

Gunnar Sjöstrand, Önhult, Box 268 A, 597 00 Åtvidaberg, Sweden

Filed May 14, 1979, Ser. No. 38,858
Claims priority, application Sweden, May 17, 1978, 7805621
Int. Cl.³ G10C *3/16*
U.S. Cl. 84—258 **5 Claims**

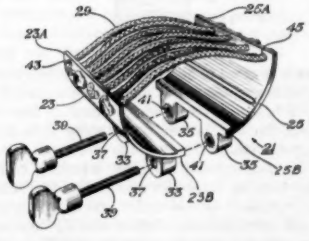


1. A plucking mechanism for a stringed instrument of the type where a key is mounted for movement between first and second positions, said plucking mechanism comprising a block of soft material fixedly secured at one end to said key, said block being partially severed adjacent the other end in a generally horizontal direction inwardly from one side of said block to form a slot therein, a transversely outwardly projecting extremity disposed at said other end and extending in the direction of said one side, said projecting extremity having a first surface for plucking a string as said key is moved from said first position to said second position, and said projecting extremity having a second surface adjacent said slot for deflecting said projecting extremity around said string in a non-plucking manner as said key moves from said second to said first position.

4,258,604
LIGATURE

Dennis G. Giokas, 1824 Ruddel St., Apt. 216, Denton, Tex. 76201

Filed Mar. 19, 1979, Ser. No. 21,572
Int. Cl.³ G10D *9/02*
U.S. Cl. 84—383 R **4 Claims**



1. A ligature for holding a reed onto the mouthpiece of a musical instrument, comprising:
a. two arcuate shaped members adapted to be located par-

tially around the mouthpiece, each arcuate shaped member comprising a solid arcuate member having a plurality of spaced apart apertures formed therethrough at a first end thereof,

b. flexible string means extending through said apertures at said first ends of said two arcuate shaped members to be located around the remaining portion of the mouthpiece for holding the reed onto the mouthpiece, and

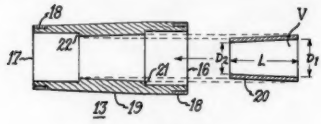
c. locking means for connecting together the other ends of said two arcuate shaped members for locking the ligature in place around the mouthpiece with the reed held between the mouthpiece and said flexible string means.

4,258,605

CLARINET BARREL WITH REMOVABLE THROAT

Robert A. Lorenzini, Box 91, Hancock, Mass. 01237

Filed Aug. 31, 1979, Ser. No. 71,590
Int. Cl.[3] G10D *9/00*
U.S. Cl. 84—386 **6 Claims**



1. In a woodwind instrument, a barrel having an internal passageway with instrument receiving recesses at both ends thereof; and

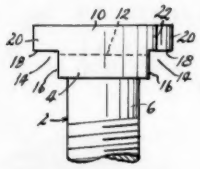
a plurality of throat members, each of which are adapted for individual insertion within said passageway, each of said throat members having an external configuration complementary to the internal configuration of said passageway and having a length corresponding to the length of said passageway, and each of said throat members having a different internal volume for providing a different tonal characteristic to said woodwind instrument when inserted into said passageway.

4,258,606

SCREW

Leroy Wilson, P.O. Box 203, Manhattan, Kans. 66502

Filed May 14, 1979, Ser. No. 38,585
Int. Cl.[3] F16B *31/02*
U.S. Cl. 411—406 **8 Claims**



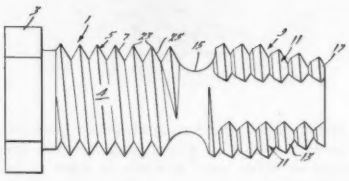
1. A screw adapted to be driven by an ordinary screwdriver having a flat blade, said screw including a threaded shank and an enlarged head, the outer end surface of said head being substantially flat and having a generally cylindrical socket formed therein concentrically to the screw axis to receive said screwdriver blade coaxially therein, a portion of the wall of said socket forming a cantilevered leaf spring affixed at one end at the periphery of said socket and being curved, toward its free end, progressively further radially into said socket toward the axis of the screw, to a diametrically spaced relation from the opposite wall of said socket less than the width of said screwdriver blade, whereby when said screwdriver blade is inserted into said socket and turned coaxially with the screw, it will become wedged between said leaf spring and said opposite socket wall to apply a turning torque to said screw, the maximum torque applicable by the driver to the screw being limited to that occuring when the driver blade has deflected said spring outwardly sufficiently to allow said blade to pass the free end of said spring.

4,258,607

VIBRATION RESISTANT SCREW

Arthur J. McKewan, Rochester, Mich., assignor to Microdot Inc., Darien, Conn.

Continuation of Ser. No. 903,903, May 8, 1978, abandoned. This application Sep. 28, 1979, Ser. No. 79,975
Int. Cl.[3] F16B *25/00, 39/30*
U.S. Cl. 411—417 **12 Claims**



1. A threaded fastener comprising an elongated shank having a torque receiving means at one end and thread forming means at the other end for forming internal threads of a predetermined shape in the wall of a previously formed hole, said shank having a fastening section with external threads adjacent said torque receiving means, said external threads being continuous and having substantially the same pitch as the pitch of the thread forming means and being of a thread form different from but adapted to mate with the internal threads formed by the thread forming means, said shank having a longitudinal axis and said thread forming means and external threads being coaxial therewith, said shank having a reduced diameter portion defining an empty annular space around the shank in said hole and also defining a thread forming torque transmission connection section between said external threads and said thread forming means which is the minimum cross section and weakest part of said shank with respect to axial tension therein whereby elongation under tension occurs primarily in the connection section and said section is more susceptible to fracture under tensile load than the other sections, said thread forming means being shaped to form internal threads with wedge ramps at the roots thereof and said external threads having crests that engage said ramps and move down the ramps as axial load on the shank increases.

4,258,608

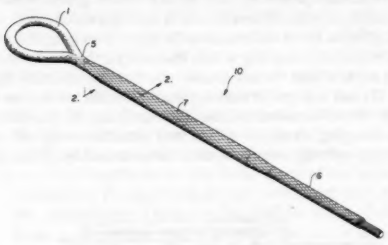
IN-LINE SNUBBER FOR USE WITH BRAIDED CORDAGE

John L. Brown, 2225 Bridlewood Dr., Rancho Cordova, Calif. 95670

Filed Feb. 14, 1979, Ser. No. 11,802
Int. Cl.[3] D04C *1/12;* **B63B** *21/00;* **F16F** *1/36*
U.S. Cl. 87—6 **3 Claims**

1. An in-line snubber for use as a tow or mooring line comprising a length of cordage having end portions and a central core of elastomeric material extending along a minor portion of the length of said cordage between said end portions and at least one outer sleeve of braided material, said outer braided sleeve being expanded radially outward in the area of said central core from a relaxed condition to define a central bore for accommodating said central core and for gripping engage-

ment with the outer surface of said central core whereby elongation of said cordage is yieldingly opposed with gener-



ally increasing resistance by the attendant constriction of said sleeve on said core and the elasticity of said core.

4,258,609

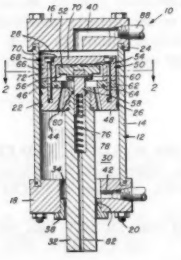
DUAL SPEED HYDRAULIC PISTON ASSEMBLY

John P. Conway, 172 Carriage La., Columbia, S.C. 29210

Filed Oct. 11, 1977, Ser. No. 841,217

Int. Cl.³ F15B *15/17, 13/042*

U.S. Cl. 91—416 **7 Claims**



1. In combination with a liquid fluid piston device having a pressure housing, a piston dividing the housing into opposing pressure chambers, a piston rod extending from said piston through one of said chambers, a source of pressurized fluid, means for permitting flow of pressurized fluid into and out of each of said pressure chambers, and first valve means for selectively conducting said fluid to the other of said opposing chambers to effect displacement of said piston; automatic means for changing the rate of displacement of the piston during travel in one direction in response to a resisting load increased above a predetermined value applied externally to said piston rod, comprising:

first passage means in the piston for conducting flow of fluid through said piston between said opposing chambers during relatively rapid travel of said piston under a resisting load less than said predetermined value,

second valve means in said other chamber actuated by changes in fluid pressure within said other chamber in response to said increased load and movable in response to said changes in pressure toward a closed position to restrict said flow between said chambers, said second valve means being movable towards said closed position solely by fluid pressure,

second passage means channeled in said piston rod and fluidly connecting a constant reference pressure to said second valve means independent of pressures within said chambers,

spring means for holding said second valve means in an open position until overcome by the fluid pressure in said other chamber when the resisting load exceeds said predetermined value, and

relief valve means connected to the chamber through which the piston rod extends for unloading pressurized fluid from said chamber during relatively slow travel of said piston under a resisting load exceeding said predetermined value.

4,258,610

CONTROL APPARATUS FOR A HYDRAULIC POWER CONSUMER

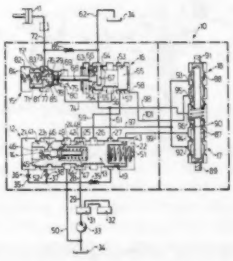
Edmund Maucher, Wooster, Ohio; Friedrich-Wilhelm Höfer, Ditzingen-Hirschlanden, and Günther Schwerin, Möglingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 4, 1978, Ser. No. 930,982

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1977, 2735558

Int. Cl.³ F15B *11/08, 13/042*

U.S. Cl. 91—445 **16 Claims**



1. A control apparatus in combination with a hydraulic power consumer operable between a neutral position and a lifted position, particularly for a hydraulic working unit on a mobile agricultural machine, said apparatus comprising a pressure medium reservoir; means for supplying a pressure medium from said reservoir; check valve means having a pilot operated check valve member responsive to the backpressure from said consumer, to maintain said consumer in an adjusted position, and being preliminarily controlled by a pilot operated inlet and exhaust valve means; a reversing control valve having a spring biased control valve member movable at least between a neutral position and a lifting position, and defining two end faces, at least two control chambers adjoining respectively, the end faces of said control valve member, an inlet chamber connected between said check valve and said supplying means, a neutral pressure outlet chamber communicating with said reservoir and an additional chamber communicating with a control chamber and said outlet chamber; a fine control section provided on said control valve member for finely regulating the passage between said inlet and neutral pressure chambers; preliminary control valve means connected between said control valve and said check valve and being operable between a closed position and an open position in which the pressure medium from said inlet and outlet chambers is admitted into one of said control chambers to displace said control valve member from said neutral position into said lifting position when operated, said preliminary control valve means further controlling said pilot operated inlet and exhaust valve means; pressure responsive means for damping the movement of said control valve member, said pressure responsive means including a first control conduit connected via a throttle between the other control chamber and said pressure medium supplying means, a second control conduit connected between said first control conduit and said additional chamber, and a flow regulating and damping valve member for controlling said first control conduit when said control valve member is moved from said neutral position into said lifting position, said flow

regulating member including a communication means formed in said control valve member and a control plug arranged for movement in said communication means between said first and second control conduit, and being acted upon on one side by pressure medium in said other control chamber and being biased from the other side by a pressure spring and by pressure medium in said second control conduit to progressively slow down the movement of said control valve member and to eliminate pressure oscillations resulting in said consumer.

4,258,611

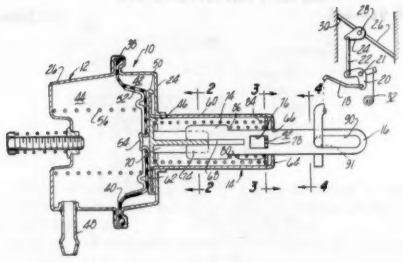
VACUUM MOTOR FOR CARBURETORS

Charles A. Detweiler, Durand, Mich., assignor to Schmelzer Corporation, Durand, Mich.

Division of Ser. No. 951,179, Oct. 13, 1978. This application May 14, 1979, Ser. No. 38,403

Int. Cl.³ F16J *1/10*

U.S. Cl. 92—84 **8 Claims**



1. A control motor comprising: a housing, a pressure responsive wall supported in said housing and forming chambers at opposite sides, means to vary the pressure in said chambers to move said wall from a first position to a second position, an output assembly including a carriage member connected to said wall for movement therewith, an output member supported by said carriage member for movement relative thereto, a seat member positioned in said carriage member, means forming a lost motion connection between said seat member and said output member for limited movement of said seat member relative to said output member, said seat member being movable between first and second positions relative to said carriage member and normally being disposed between said first and second positions of said seat member, first biasing means acting between said seat member and carriage member to resist movement of said output member in one direction relative to said carriage member, second biasing means acting between said seat member and said output member to resist movement of said output member in an opposite direction.

4,258,612

PISTON PUMP FOR CONVEYING CONCRETE MIXES

Herbert Kuhlmann, Herne, Fed. Rep. of Germany, assignor to Wibau, Gruendau-Rothenbergen, Fed. Rep. of Germany

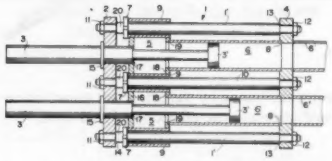
Filed Dec. 14, 1978, Ser. No. 969,369

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1977, 2757035

Int. Cl.³ F01B *29/08*

U.S. Cl. 92—128 **3 Claims**

1. A piston pump for conveying concrete or the like, comprising pump frame means including base means, cylinder head means and guide tie rod means rigidly connecting said base means and said cylinder head means to form said frame means, whereby said base means and said cylinder head means are held at a fixed spacing from each other, piston cylinder drive means operatively secured to said cylinder head means on one side thereof, scavenging chamber means, guide bushing means **(9)** forming part of said scavenging chamber means for slidably securing said scavenging chamber means to said guide tie rod means in said frame means, centering socket means in said scavenging chamber means and in said base means, conveying cylinder means operatively held in said centering socket means and positioned in said frame means in axial alignment with said piston cylinder drive means and with said scavenging chamber means, adjustable securing means including a threaded section **(20)** on each of said tie rod means between said cylinder head means **(2)** and said guide bushing means **(9)** and nut means **(7)** on each of said threaded sections **(20)** for fixing the position of said scavenging chamber means and simultaneously of said conveying cylinder means in said frame means by tightening



said nut means, and wherein, solely upon loosening of said nut means with said rigid connection of said guide tie rod means to said base means and said cylinder means maintaining said fixed spacing, the guide bushing means and scavenging chamber means are movable so that the axial spacing between said socket means is increased to an extent longer than the axial length of said conveying cylinder means, whereby said conveying cylinder means may be mounted in or disassembled from said frame means without the need for disassembling the entire frame means and without the removal of said scavenging chamber means.

4,258,613

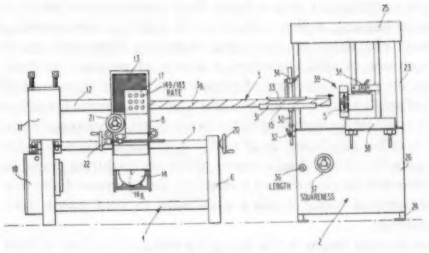
PAPER TUBE WINDERS AND CUT OFF SAWS

Richard F. Fegley, Warrington, and Steven R. Kiss, Fort Washington, both of Pa., assignors to PACO Winders, Inc., Philadelphia, Pa.

Filed Mar. 28, 1979, Ser. No. 24,507

Int. Cl.³ B31C *3/00*

U.S. Cl. 493—22 **3 Claims**



1. In the combination of a paper tube winder having a drive system including a drive motor having connections to move formed tubing at a constant linear speed along an axis and an orbital saw having means supporting a saw blade and having a drive system for moving the saw blade in a orbital path including a substantially linear portion wherein the blade engages a tube for cutting the same, the improvement comprising:

in the winder drive system, the drive motor having a winder drive shaft;

in the saw blade orbit drive system an output shaft providing power to move the saw blade in said orbital path and an orbit drive motor for driving the output shaft;

first control means connected to said systems for operating said drive motors including a first manually actuatable means readily available to the operator to vary the speed

of the output shaft and the speed of the winder drive shaft in the same amount;

second control means connected to said orbit drive motor including second manually actuatable means readily available to the operator to change the speed of the output shaft with respect to the speed of the winder drive shaft;

third control means in said saw blade orbit drive system including third manually actuatable means readily available to the operator to adjust the speed of the saw blade in the linear portion of said orbital path; and

said first, second and third control means providing;

for said first control to set the linear speed of the tubing and the speed of the saw blade in said orbital path and then for the second control means to change the speed of the saw blade in the orbital path to control the rate at which the saw blade arrives at said linear portion for the cutting operation and thereby determining the length of a stick to be cut;

for said third control means to adjust the speed of the saw blade in the linear portion of said orbital path to match the linear speed of the tube and thereby control the squareness of the cut; and

for said first control means, after said stick length and squareness of cut have been determined, to change the speed of the output shaft and the speed of the winder drive shaft in the same amount thereby change the rate at which the sticks are cut without changing the length thereof.

4,258,614

CYLINDER DEVICE

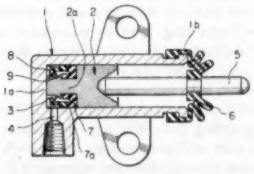
Masami Aono, Yokohama, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Mar. 26, 1979, Ser. No. 24,038

Claims priority, application Japan, Mar. 29, 1978, 53/37715[U]

Int. Cl.³ F01B *11/02*; F16J *9/08*

U.S. Cl. 92—85 R **4 Claims**



1. A cylinder device comprising a main body having therein a cylinder having a closed inner end, a piston slidably fitted in the cylinder and having a small diameter portion on the inner end thereof, a cup seal fitted on the outer circumference of the small diameter portion of the piston and having a lip portion slidably engaging with the inner circumferential surface of the cylinder, an annular retainer mounted on and in the inner end of the cylinder and having a cylindrical portion extending toward the outer end of the cylinder with an end surface for engaging with the lip portion of the cup seal when the piston is at the innermost position in the cylinder for urging the lip portion of the cup seal radially outwardly against the inner circumferential surface of the cylinder, and a spring between said retainer for urging the retainer against the inner end of the cylinder and maintaining the retainer immobile in the inner end of the cylinder during the stroke of the piston.

4,258,615

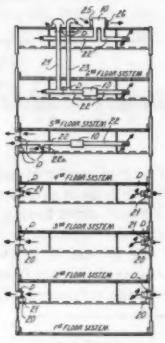
CEILING CONSTRUCTION FOR A HEATING, VENTILATION AND AIR CONDITIONING SYSTEM

Constantine Vivian, 72-11 45th Ave., Woodside, N.Y. 11377

Continuation-in-part of Ser. No. 938,576, Aug. 31, 1978, abandoned. This application Mar. 9, 1979, Ser. No. 19,048

Int. Cl.³ F24J *3/04*

U.S. Cl. 98—40 DL **2 Claims**



1. In a building having a heating, ventilation and air conditioning system, exterior walls and at least one story having a true ceiling, a suspended ceiling, and lighting fixtures occupying openings in the suspended ceiling, the true and suspended ceilings being vertically spaced thereby to form a plenum, the improvement comprising means partitioning the plenum into an interior plenum forming a return air plenum for said system and at least one perimeter plenum, the exterior walls forming the periphery of each said at least one perimeter plenum and each said at least one perimeter plenum surrounding said return air plenum and being in non-communicating relation with said return air plenum, temperature sensing means located outside said building and temperature sensing means located within said perimeter plenum, ventilation control means operatively connected to the perimeter plenum to control the ventilation of said perimeter plenum wherein said ventilation control means is regulated by a scheduled control unit that is operatively connected and responsive to the temperature sensing means located within said perimeter plenum and temperature sensing means located outside said building, said scheduled control unit being arranged to change the perimeter plenum temperature by regulating said ventilation control means in response to changes in the sensed temperature outside the building and thereby regulate the radiant heat transfer from the perimeter plenum to the space below the suspended ceiling, the suspended ceiling allowing the passage of air between the space below the suspended ceiling and the plenums.

4,258,616

AIR OUTLET FOR ROOM VENTILATION

Adalbert Zeller, and Wolfgang Ruf, both of Kolbingen, Fed. Rep. of Germany, assignors to Schako-Metallwarenfabrik, Ferdinand Schad GmbH, Kolbingen, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 84,952

Int. Cl.³ F24F *13/10*

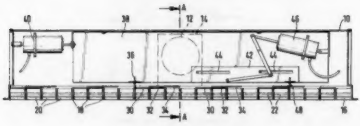
U.S. Cl. 98—40 D **9 Claims**

1. An air outlet for the ventilation of rooms, spaces and the like, adapted for connection to a source of conditioned air, said air outlet including a distribution box having an outlet slot open to one of said rooms or spaces, said slot being subdivided into individual ducts and provided with a plurality of air guide vanes for directing the air flow through said ducts, said air outlet further including at least a first air control slide disposed within said distribution box for selectably obturating said ducts, and wherein, according to the invention,

said outlet slot is subdivided into individual ducts by a plurality of transverse bridges;

each of said ducts is associated with a separate, individually adjustable one of said air guide vanes;

there are provided second and third air control slides, disposed in parallel and in superposition with said first control slide, said first, second and third air control slides



being capable of limited axial movement with respect to one another and with respect to said air distribution box, each of said air control slides having a plurality of duct covers, the size of which is substantially equal to the flow cross section of one of said air ducts, said duct covers being disposed at an axial distance from one another equal to four times the distance between adjacent air ducts.

4,258,617

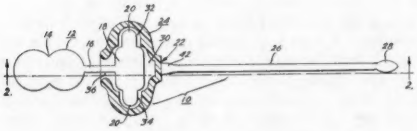
SKEWER

Samuel A. Akwei, 135 E. Herman St., Philadelphia, Pa. 19144

Filed Jun. 6, 1979, Ser. No. 46,069

Int. Cl.[3] A47J *37/04*

U.S. Cl. 99—419 **4 Claims**



1. A skewer, for cooking shish kabobs or the like, comprising:

a member having a cavity therein, the cavity having an opening at one end;

a spit mounted on the member, extending outwardly in a direction opposite the cavity opening; and,

a handle assembly, a portion of which forms an insert movably but lockably disposed within the cavity of the spit bearing member, the handle assembly and the spit bearing member being interfitted, but otherwise unconnected, and capable of relative interdependent movement.

4,258,618

METHOD AND APPARATUS FOR TRIMMING ONIONS OR LIKE PRODUCE

William J. Lawson, Milton, Del., assignor to Magnuson Engineers, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 886,470, Mar. 14, 1978, Pat. No. 4,202,261. This application Jul. 24, 1979, Ser. No. 60,215

The portion of the term of this patent subsequent to May 13, 1997, has been disclaimed.

Int. Cl.[3] A23N *15/08*

U.S. Cl. 99—636 **1 Claim**

1. A machine for trimming onions or like produce comprising:

a storage receptacle to receive onions;

means to convey onions one at a time from said storage receptacle;

an orientation device positioned to receive the onions from said convey means, said orientation device comprising:

a power driven conveyor belt forming a surface moving in one direction for receiving the onions; and

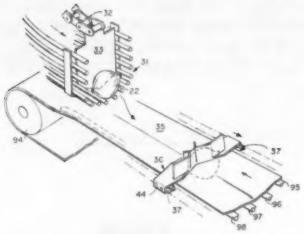
spaced pocket pusher elements and means for moving the elements along the conveyor belt surface in the direction opposing the direction of movement of the belt and in succession, each element comprising a pair of planar flight sections positioned end-to-end across said belt surface with adjacent ends spaced apart and extending away from the direction of travel to form a V-configured pusher elment to receive and cause an onion to roll on said surface and thereby orient the stem axis across the plate while centering the onion relative to the flight sections;

means forming said conveyor belt surface in a V-configuration with the center lower to assist in holding the onions at the center of the belt surface;

a trimming station comprising a pair of laterally spaced trimming blades for engaging an onion moving therebetween to trim protrusions from opposite ends thereof;

means to grip and pick up each onion from the pusher element comprising:

a vertically disposed rotating disc supported for rotation about a horizontal axis;



a plurality of circumferentially spaced rigidly mounted first gripping jaws supported on and extending radially from said disc;

a second gripping jaw for each rigidly mounted gripping jaw mounted on the disc for pivoting towards and away from said corresponding rigid gripping jaw and thereby form pairs of gripping jaws;

spring means for biasing each second gripping jaw towards the corresponding rigid gripping jaw;

a profiled cam fixed to said disc and positioned to engage said second gripping jaws in succession and cyclically cause said second jaw to close towards the corresponding rigid jaw of the pair and remain closed at a position to hold an onion therebetween;

means supporting and rotating said disc for first swinging the pairs of gripping jaws through the center of the space between a pair of flight sections while each second jaw is being moved towards the corresponding first jaw to grip the oriented onion and carry it between the trimming blades to trim the protrusions therefrom; and

said cam thereafter acting to move the second jaw from the first jaw to release the trimmed onion.

4,258,619

ROTARY BALER HAVING BALE-EJECTING APPARATUS

Melvin V. Gaeddert, Newton, Kans., assignor to Hesston Corporation, Hesston, Kans.

Filed Jun. 28, 1979, Ser. No. 52,743

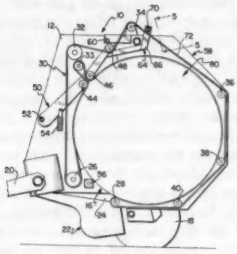
Int. Cl.[3] A01D *39/00;* **B30B** *5/04*

U.S. Cl. 100—88 **5 Claims**

1. In a rotary baler having a flexible web carried in part by a gate of the baler swingable to an open position for discharge of a finished bale from the baler, said web being disposed for driving engagement with the bale during formation thereof

and continuing in contact with the bale until the latter is fully discharged, a bale ejecting improvement comprising:

a web-tightening device disposed in the path of travel of the web as the latter is carried by said gate during movement to said open position thereof,



said device being disposed to deflect said web transversely thereof during said movement of the gate whereby to apply an ejecting force to the bale through said web,

said web being disposed out of substantial deflecting engagement with said device when the gate is in a closed position thereof.

4,258,620

TOOL FASTENING MEANS FOR A PRESS

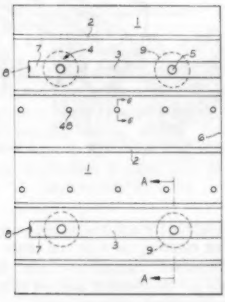
Håkan Sallander, Hestravägen 1, S-514 00 Tranemo, Sweden

Filed Feb. 26, 1979, Ser. No. 15,140

Claims priority, application Sweden, Apr. 18, 1978, 7804353

Int. Cl.³ B30B *15/02*

U.S. Cl. 100—224 **12 Claims**



1. A machine of the type comprising a two-part tool, a first part of said tool being mounted on a first surface of a first mounting member and a second part of said tool mounted on a second mounting member, means for producing relative movement between said first and second mounting members in a direction of movement toward and away from one another to selectively engage and separate said tool parts, said first surface and said first tool part including cooperating guide means enabling said first tool part to be moved along said first surface to a predetermined position thereon, said first mounting member and said first tool part including first cooperating clamping means disposed internally of said first tool part and said first mounting member for firmly clamping said first tool part against said first surface in said predetermined position, said second mounting member and said second tool part including cooperating engagement means which are brought together to a mating position in said direction of movement, said engagement means including second cooperating clamping means movable to a clamping relationship with said engagement means in said mating position, to clamp said second tool part to said second mounting member.

4,258,621

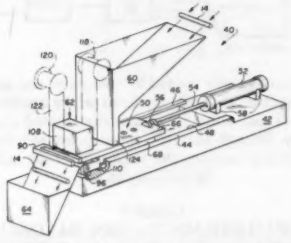
ROTATING OBJECT IMPRINTING DEVICE WITH RELATIVELY SLIDING PLATE

Earl Birkett, c/o Birkett Automation Industries, Ltd., 91 E. Fulton Ave., Roosevelt, N.Y. 11575

Filed May 31, 1979, Ser. No. 44,178

Int. Cl.³ B41F *17/20*

U.S. Cl. 101—40 **1 Claim**



1. An imprinting device for pens and similar cylindrical objects comprising superposed top and bottom plate members operatively arranged for movement along a movement path from a clearance position past a printing station, said superposed top and bottom plate members being so connected to each other as to allow selected sliding movement of said top plate member relative to said bottom slide member, said top plate member having a cylindrical object-receiving slot with a bottom opening therein, a roller journalled for rotation on said bottom plate member and extending into said slot bottom opening of said top plate member, and at said printing station a cooperating imprinting means and roller rotation-imparting means in spaced apart facing relation to each other, said roller rotation-imparting means being a ramp disposed at said printing station in said movement path of said superposed plate members and effective to cause the raising of said roller and cylindrical object into printing contact with said imprinting means such that there is driving rotation in said roller and corresponding driven rotation in said cylindrical object during said movement of said superposed plate members past said printing station, and stop means on said bottom plate member effective to hold said bottom plate member against movement and to allow said continued sliding movement of said top plate member preparatory to discharging an imprinted object from the end of said top plate member extending beyond said bottom plate member.

4,258,622

METHOD OF POSITIONING A MOVING PART AND A PRINTER OPERATING IN ACCORDANCE WITH SAID METHOD

Stephane Estrabaud, Orsay, and Gerard Nourigat, St. Remy les Chevreuses, both of France, assignors to Compagnie Generale d'Automatisme, Paris, France

Filed Nov. 19, 1979, Ser. No. 95,267

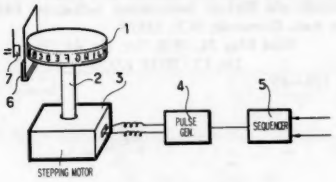
Claims priority, application France, Nov. 17, 1978, 78 32501

Int. Cl.³ B41J *1/22, 9/00*

U.S. Cl. 101—93.01 **6 Claims**

1. A method of shifting a moving unit from a first position to a second position by means of a stepping motor driven by a finite sequence of pulses, said moving unit being liable to oscillate about its equilibrium point, said method comprising choosing the time intervals which separate said pulses as a function of the period and of the damping factor of the oscillation so that the last pulse is applied to the motor at an instant when the oscillation resulting from the set of preceding pulses brings the

moving unit substantially to the required final position and reduces its speed substantially to zero, the improvement comprising applying the last pulse but one of the sequence of pulses to the motor at the instant when the point which represents the



shift of the moving unit caused by said pulse and as shown in a phase-plane chart at a point centered on the equilibrium point resulting from said pulse is substantially located on the spiral which passes through the zero speed point and through the point of the x-axis equal to the amplitude of the last step.

4,258,623

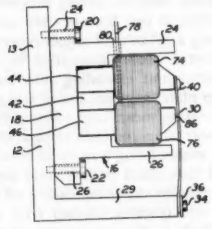
PRINT HAMMER MECHANISM HAVING DUAL ELECTROMAGNETIC COILS AND POLE PIECES

Gordon B. Barrus, El Segundo, and Jerry Matula, Westminster, both of Calif., assignors to Printronix, Inc., Irvine, Calif.

Filed Jan. 30, 1979, Ser. No. 7,788

Int. Cl.³ B41J *7/70*

U.S. Cl. 101—93.04 **1 Claim**



1. A multiple hammer bank for a dot printer comprising:

a back frame having a main portion and a bottom portion;

a plurality of mounting frames mounted in spaced-apart relation along the main portion of the back frame and each having upper and lower portions thereof extending outwardly from a generally vertically disposed rear portion;

a plurality of elongated, flat, substantially parallel, magnetic spring hammer elements of resilient material disposed in spaced-apart relation along the length of the back frame with the lower fixed end of each hammer element being mounted on the bottom portion of the back frame and an opposite upper free end of each hammer element being free to flex back and forth relative to a different one of the mounting frames, each hammer element assuming a relatively straight configuration defining a neutral position when not flexed; and

a plurality of magnetic circuits, each being mounted on a different one of the mounting frames and including a rare earth magnet disposed adjacent the vertically disposed rear portion of the mounting frame between the upper and lower portion of the mounting frame, a pair of opposite pole pieces mounted on opposite sides of the rare earth magnet between the rare earth magnet and the upper and lower portions of the mounting frame and extending outwardly from the vertically disposed rear portion of the mounting frame to a location adjacent the upper free end of the hammer element mounted on the hammer mounting frame, each of the pair of pole pieces having surfaces extending from a back end of the pole piece to an opposite tip and the rare earth magnet having a pair of opposite surfaces disposed in contact with and generally coextensive with the surface of each pole piece along the back end thereof, one of the pair of pole pieces receiving the upper free end of the hammer element and the other one of the pair of pole pieces forming an air gap with the upper free end of the hammer element when the hammer element is in a spring-loaded retract position in which the strip is flexed out of the neutral position and assumes a curved configuration, the rare earth magnet establishing a magnetic field normally maintaining the hammer element in the spring-loaded retract position, and a pair of electromagnetic coils, each mounted on a different one of the pair of pole pieces, the electromagnetic coils being operative when energized to release the hammer element for flight away from the spring-loaded retract position, the resilient material of the hammer element combining with the magnetic field of the rare earth magnet to return the hammer element to the spring-loaded retract position following release of the hammer element and impact of a printable medium by the upper free end of the hammer element.

4,258,624

MINIATURIZED PRINTER

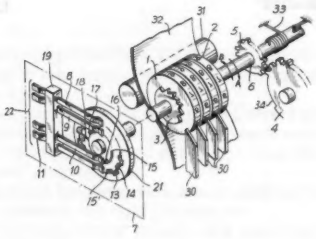
Yoshihiro Mitsui, Shiojiri, Japan, assignor to Shinshu Seiki Kabushiki Kaisha and Kabushiki Kaisha Suwa Seikosha, both of Tokyo, Japan

Filed Nov. 6, 1978, Ser. No. 957,967

Claims priority, application Japan, Nov. 4, 1977, 52-148052[U]

Int. Cl.³ B41J *1/44*

U.S. Cl. 101—99 **12 Claims**



1. A position detector for a miniaturized printer, said printer having a print ring rotating on a driven shaft, said print ring having print characters circumferentially disposed thereabout, and means for positioning and for printing a selected one of said print characters, comprising:

a first electrical brush;

a plurality of first electrical contacts, said first electrical contacts moving relative to said first brush with a velocity proportional to the rotation of said shaft, said first contacts being spaced apart whereby intermittent connection is made between said first brush and said first contacts, the timing of said connections being indicative of the rotational position of said print characters;

a second electrical brush;

a plurality of second electrical contacts, said second electrical contacts moving relative to said second brush with a velocity proportional to the rotation of said shaft, said second contacts being spaced apart whereby intermittent connection is made between said second brush and said second contacts, the timing of said connections being indicative of the rotational position of said print characters;

said connections between said second brush and said second contacts occurring during the time interval between said connections between said first brush and said first contacts

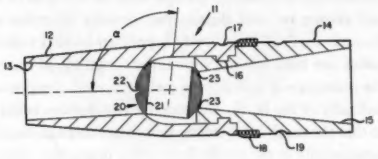
whereby a timing indication of print character positions is provided by said first brush and first contacts, and an auxiliary indication is provided by said second brush and said second contacts.

4,258,625

BALL-ACTUATED TUBULAR PROJECTILE

William L. Black, 1802-B Withington, China Lake, Calif. 93555

Filed May 8, 1979, Ser. No. 37,202
Int. Cl.[3] F42B *11/00*
U.S. Cl. 102—92.1 15 Claims



1. A projectile comprising:

a tubular body dimensioned to interact with a gun barrel to produce projectile spin and having a nose portion and a base portion and a longitudinally extending passage extending therethrough connecting said nose and base portions so as to permit gas flow through said passage as well as around said tubular body, and

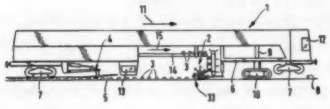
spherical ball valve means mounted within said longitudinally extending passage between said nose and base portions and movably contained therein for selectively controlling said gas flow in response to the spin of said projectile.

4,258,626

MOBILE TIE LAYING APPARATUS

Josef Theurer, Vienna, and Manfred Brunninger, Linz, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed May 8, 1979, Ser. No. 37,100
Claims priority, application Austria, Jun. 14, 1978, 4349/78
Int. Cl.[3] E01B *29/10*
U.S. Cl. 104—6 14 Claims



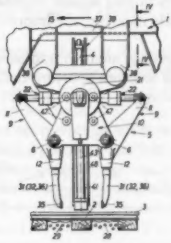
1. A mobile apparatus for laying a succession of spaced ties on track-supporting ballast along a right-of-way, which comprises a vehicle movable along the right-of-way, means arranged on the vehicle to receive the ties to be laid and to lower the received ties, means arranged on the vehicle to receive the lowered ties and to lay the ties on the ballast, the tie laying means including a roller conveyor, a gliding conveyor, and a device for spacedly laying the succession of the conveyed ties on the ballast as the vehicle moves along the right-of-way in an operating direction, wherein the device comprises a power-driven guide wheel rotatable about a horizontal axis extending transversely of the right-of-way and a plurality of abutment and entrainment elements mounted on the wheel and arranged to interdigitate between successive ones of the conveyed ties in an end region of the tie laying means adjacent the ballast.

4,258,627

BALLAST TAMPING

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Continuation-in-part of Ser. No. 770,901, Feb. 22, 1977, abandoned. This application Nov. 30, 1977, Ser. No. 855,873
Claims priority, application Austria, Jun. 9, 1976, 4219/76; Dec. 14, 1976, 9256/76
Int. Cl.[3] E01B *27/16*
U.S. Cl. 104—12 5 Claims



1. A tamping unit for tamping ballast under a tie supporting a track rail, adjacent ones of the ties defining cribs therebetween, comprising

(a) a vertically adjustably mounted carrier,

(b) a plurality of tamping tools arranged in a plane extending transversely of the track rail for immersion in a respective one of the cribs on each side of the rail in respective groups straddling the rail, each group comprising at least one tamping tool,

(c) a pair of rigid integral supports, each one of the supports including a central pivotal support arm mounted on the carrier for pivoting about a transverse axis extending substantially perpendicularly to the track rail and substantially parallel to the plane of the track, and two transverse arms extending perpendicularly to the track rail from each central pivotal arm on a respective side of the track rail, the tamping tools being mounted on the transverse arms of each integral support on the respective sides of the track rail to straddle the rail and respective ones of the tamping tools being mounted on the pair of supports in pairs of tools forming a pincer straddling a respective one of the ties disposed between the pairs of tools, the tool or tools of one of said groups on one side of the rail being mounted stationarily on a respective one of the transverse arms, the central pivotal support arms mounting the supports on the carrier for pivoting about the transverse axis,

(d) one drive for pivoting each support about the transverse axis connected to the central pivotal support arms whereby the tamping tools are reciprocated in the direction of the track tie straddling the one tie,

(e) a common drive for vibrating the supports connected to the pivoting drives for vibrating the reciprocating tamping tools mounted on the supports in common, and

(f) a pivot mounting each tamping tool or tools of the other group on the other side of the rail on a respective one of the other transverse arms, the pivot extending substantially parallel to the track rail for pivoting the tamping tool or tools mounted on the pivot independently in a direction transverse to the track rail.

4,258,628

ARTICULATED RAILWAY COUPLING

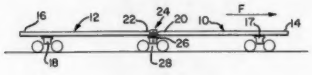
Russell G. Altherr, Munster, Ind., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Jun. 11, 1979, Ser. No. 47,272
Int. Cl.[3] B61D *3/10;* B61F *3/12, 5/18;* B61G *5/02*
U.S. Cl. 105—4 R 2 Claims

1. In an articulating device for joining adjacent first and

second railroad car bodies, said device comprising a male connecting member attached to a rear of said first car body and a female connecting member attached to a front of said second car body, said female member having an inner cavity for disposition of an outer end of said male connecting member, said male connecting member outer end having a convex radiused end surface for complementary engagement with a concaved radiused portion of a follower in operative contact with a wedge element disposed between said follower and a sloped end surface of said female connecting member cavity, said female and male connecting members joinable by a pin located in aligned apertures in said female member and through a pin aperture in said male member, the improvement in said device comprising,

said male connecting member radiused end surface and a rear portion of said pin aperture defining therebetween a solid, continuous end wall with said rear portion of said



pin aperture having a vertical convex configuration forming a substantial contact area with said pin, and

resilient means carried in part in slot means formed in a rear face of said follower to selectively receive said resilient means in a compressed state, said resilient means in a natural state projecting outwardly from said follower to engage said wedge element and maintain said follower and said wedge element in a spaced relationship,

said resilient means being compressible within said slot means upon a buffing force being applied to said members so as to alter said spaced relationship between said follower and said wedge element, and said resilient means being compressible within said slot means upon said members being horizontally misaligned in response to pitching motions between said members with said substantial area of contact between said male member pin aperture and said pin shifting vertically in response to said pitching motion.

4,258,629

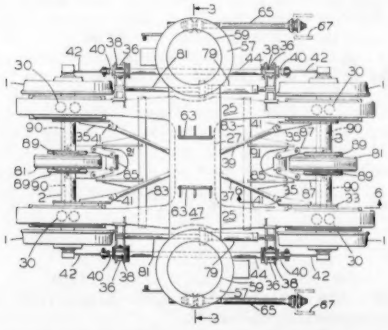
BRAKING AND STEERING RADIAL TRUCK

Keith L. Jackson, Granite City; James J. Reece, Belleville, and Kenneth E. Spencer, Granite City, all of Ill., assignors to General Steel Industries, Inc., St. Louis, Mo.

Filed Sep. 4, 1979, Ser. No. 72,474

Int. Cl.[3] **B61F** *5/10, 5/16, 5/38;* **B61H** *13/24*

U.S. Cl. 105—167 **13 Claims**



1. In a railway truck, a pair of wheel and axle assemblies each comprising an axle and a pair of railway wheels rigidly mounted on the ends thereof, journal bearing structure including journal bearings on the end portions of each axle and having upwardly facing surfaces fore and aft of the respective bearing and at a substantially lower level than the top of the respective bearing structure mounting flat horizontal elastomeric pad devices, and a yoke embracing each said journal bearing structure and having downwardly facing surfaces carried by said horizontal pad devices on the respective journal bearing structure and having fore and aft surfaces sloping upwardly towards each other and mounting correspondingly sloping elastomeric pad devices, a truck frame having longitudinal side members with downwardly open jaws embracing the respective yokes and having their opposite fore and aft surfaces corresponding in slope with the surfaces of said yokes and resting on said sloping pad devices whereby said truck frame is vertically resiliently supported on said yokes and said yokes are held against substantial longitudinal movement by the resistance of said sloping pad devices to compression longitudinally of the truck, said sloping pad devices being arranged so that the resultant dynamic force lines through them intersect substantially at the center lines of the respective axles whereby to prevent the application to said yokes of overturning moments caused by longitudinal forces, said horizontal pad devices being yieldable in shear to permit said axles to pivot about vertical axes between positions transverse of the truck on tangent track and radial of the track on curved track.

12. In a railway truck comprising a pair of wheel and axle assemblies each having a pair of railway flanged wheels rigidly mounted on the ends of an axle, journal bearing structure on the end portions of each axle, a truck frame vertically resiliently supported on said journal bearing structures, means mounting said truck frame on said journal bearing structures to permit said axles to pivot a vertical axis between positions transverse of the truck on tangent track and positions substantially radial of the track on curved track, separate snubbers each having a fixed part hung from the side members of said truck frame adjacent each axle longitudinally inwardly from the respective axle and each having a longitudinally movable part extending longitudinally therefrom toward the respective axles, longitudinally extending links connected at their respective ends to the adjacent snubber movable parts and to an end portion of the adjacent axle, and a longitudinal force-transmitting member connecting said snubber fixed parts at each side of the truck to each other, whereby said snubbers react on each other instead of on the truck frame.

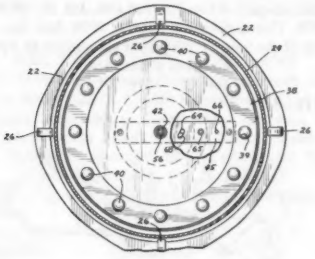
13. In a railway truck comprising a pair of wheel and axle assemblies each having a pair of railway wheels rigidly mounted on the ends of an axle, journal bearing structures on the end portions of each axle, a truck frame carried on said journal bearing structures, means mounting said truck frame on said journal bearing structures to permit said axles to pivot a vertical axis between positions transverse of the truck on tangent track and positions substantially radial of the track on curved track, a brake disc mounted on each said axle substantially at the center thereof, brake shoes supported from said journal bearing structures on both sides of each of said discs and positioned beneath the respective axles for selective engagement, means for urging said shoes into frictional engagement with opposite sides of the respective discs, and longitudinally acting force-transmitting structure connecting said shoes to said truck frame at substantially the level of said shoes, whereby to oppose the tendency of retardation forces to cause relative longitudinal movement between the respective axles and the truck frame during brake application.

4,258,630

PORTABLE TURNTABLE FOR USE IN MICROWAVE OVENS

Jorgen A. Jorgensen, Bloomington, and Donald W. Nygren, Minneapolis, both of Minn., assignors to Northland Aluminum Products, Inc., South Minneapolis, Minn.

Filed Jul. 25, 1978, Ser. No. 927,928
Int. Cl.[3] A47B *85/00, 11/00;* F24B *9/00*
U.S. Cl. 108—20 **10 Claims**



9. In a portable turntable for use in microwave ovens to rotate a container containing a food product cooked within the oven,

(a) a pan shaped base having a flat bottom and an upright annular peripheral side wall,

(b) a circular cover disposed in covering position over the base and having a peripheral downwardly depending rim adapted to mate with the pan side wall to form an enclosure,

(c) said base and cover both being formed of a material transparent to microwave having a low dielectric constant and having a low dissipation factor,

(d) a metal housing mounted within the enclosure and being secured to the base, said housing having its external surface free of sharp edges with the exception of an aperture of a predetermined size which is a fraction of the wavelength of the microwave energy employed,

(e) a motor mounted within the housing,

(f) means for energizing the motor, and

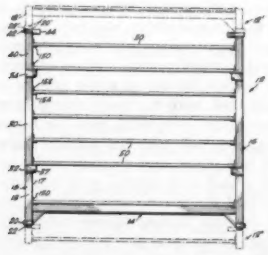
(g) drive means having the qualities of said material connecting the motor to the cover through the housing aperture to rotate the cover on the base about its center axis so that a container resting upon the cover will rotate with the cover.

4,258,631

STACKABLE COLLAPSIBLE SHIPPING RACK

John E. Brown, 10300 Chades Limpus Rd., Orlando, Fla. 32706

Filed Apr. 11, 1979, Ser. No. 29,110
Int. Cl.[3] A47B *43/00*
U.S. Cl. 108—91 **6 Claims**



1. A stackable collapsible shipping rack with removable shelves said rack being sized and configured for stacking on top of another similar rack in both the upright and collapsed position respectively, the rack comprising:

a base,

a first and second pair of normally upright legs of a predetermined length connected to the base, each leg including;

a bottom section having a terminal first end with first positioning means,

a middle section,

a top section having a terminal end with second positioning means for compatible mating engagement with the first positioning means of another rack for stacking of the racks, and

a pair of hinge means, the first hinge means connected at the juncture of the bottom and middle sections and the second hinge means connected at the juncture of the middle and top sections, each hinge means swingable inwardly to an open storage position and upwardly to a closed operational position, the first hinge means having an upper surface defining an abutment surface, sized and shaped for compatible interengagement with another rack's first positioning means and exposed when the hinge means is in the open or stored position, and

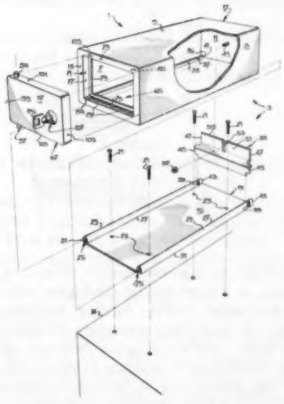
a plurality of substantially parallel guide means spanning each pair of legs and the guide means defining shelf guide means for supporting shelves, the middle section having a perdetermined length which is approximately equal to but slightly less than half the distance between the first and second pairs of legs so that when the rack is in the storage position, the collapsed middle support sections do not cross one another and the top section is folded between the middle sections and the removable shelves in stored position on said base, and said shelves, when supported on said guide means, preventing the inward swinging of said hinge means.

4,258,632

INDIVIDUAL SAFE KEEPING BOX

LaPointe, St-Bruno, Canada, assignor to Rolland Miville, Ville LaSalle, Canada

Filed Dec. 26, 1978, Ser. No. 972,920
Int. Cl.[3] E05G *1/026*
U.S. Cl. 109—59 R **5 Claims**



1. An individual safekeeping box, comprising:

a protective enclosure having an access opening, said access opening having first and second spaced, opposed framing wall sections, and said enclosure comprising a top cover part and a bottom plate part, cooperating means on the two parts for detachably connecting them together, and

locking means for locking the two connected parts together,

said cooperating connecting means comprising a rib on each side of the bottom plate part, said rib forming a connecting groove, and a flange on the bottom edge of each side of the top cover part for sliding in the grooves to slidably connect the bottom plate part and the top cover part together;

a protective door for closing said access opening, said door being receivable within said access opening in a snug relationship and having first and second edge portions spaced apart a distance slightly less than the spacing between said first and said second framing wall sections;

cooperating means on said door and said enclosure for detachably mounting said door onto said enclosure, said first framing wall section having a hinge hole therein and said second framing wall section having a hinge slot therein disposed to confront said hinge hole, and said cooperating mounting means including:

a first projecting hinge pin mounted on said first edge portion of said door; and

a second projecting hinge pin mounted on said second edge portion of said door in general alignment with said first hinge pin, said first and second hinge pins projecting in opposite directions, and the axes thereof defining a pivot axis for said door;

whereby said door can be detachably mounted on said enclosure by holding the door at an angle with respect to said opposed first and second framing sections and sliding it into said access opening, seating said first hinge pin in said hinge hole, and then rotating said door about said first hinge pin to seat said second hinge pin in said hinge slot, whereupon said door can be pivoted between open and closed positions about said pivot axis; and

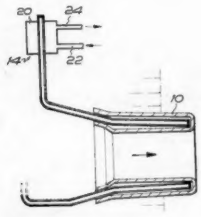
a lock carried by said door, for locking said door to said enclosure after said door has been pivoted to its closed position.

4,258,633

COOLING OF TUYERES IN BLAST FURNACES

Raymond N. Elderfield, Sheffield, England, assignor to Housley Kimmich Company, Cuyahoga Falls, Ohio

Filed Mar. 19, 1979, Ser. No. 21,780
Int. Cl.[3] F23L 5/00; C21B 7/16
U.S. Cl. 110—182.5 **8 Claims**



1. A tuyere for use in a blast furnace, formed of spaced apart walls meeting at a nose end of the tuyere which is the end adapted to be located within a furnace, and comprising;

a plurality of heat pipes extending longitudinally of the tuyere body within the space between said walls and having closed ends terminating in the vicinity of said nose end of the tuyere so as to be able to remove heat therefrom, said heat pipes extending, from the closed ends, to a heat exchange location, said heat pipes adapted to convey a low pressure boiling-condensing fluid and having means for conveying the fluid in liquid form towards the said closed ends and, as a gas, within the same pipe, away from said closed ends,

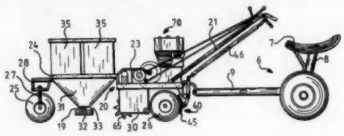
All of said pipes including at least one portion inclined downwardly between its heat exchange location and its closed end to facilitate movement of liquid from said heat exchange location towards said closed end.

4,258,634

LAWN COMBINE WITH IMPROVED BRAKE ASSEMBLY

Pat Lore, Oakdale, and Stanley L. Weber, Westbury, both of N.Y., assignors to Lawn-a-Mat Chemical & Equipment Corporation, Westbury, N.Y.

Continuation-in-part of Ser. No. 926,606, Jul. 21, 1978, Pat. No. 4,196,678. This application Mar. 6, 1979, Ser. No. 18,088
The portion of the term of this patent subsequent to Apr. 8, 1997, has been disclaimed.
Int. Cl.[3] A01C 7/08
U.S. Cl. 111—10 **7 Claims**



1. A lawn combine, comprising:

a frame including a plurality of rotatable wheels supporting and coupled to said frame;

a drive-actuated rotatable aerator movably mounted on said frame for movement between a lower operative position, in which it is disposed for engagement with a lawn surface and an upper raised, inoperative position, in which it is disposed for non-engagement with the lawn surface;

means for moving said aerator between said operative and inoperative positions thereof, mounted on said frame;

drive-actuated feed means mounted on said frame for feeding materials in prescribed dosages to the lawn surface in an area generally beneath said frame, said feed means comprising a main hopper mounted on said frame having a lower opening through which material fed to said hopper is dispensed and a plurality of bins mounted on said frame, each of which has a lower slot-shaped dispensing aperture for feeding a particular material to said main hopper, said bins each including drive-actuated regulator means for metering material fed thereto in prescribed dosages to said main hopper, said regulator means each including a rotatable, cylindrical sleeve having a plurality of longitudinally-extending slots formed therethrough spaced about the periphery thereof, which sleeve is rotatably supported on said frame such that at least a portion thereof is disposed beneath one of said slot-shaped dispensing apertures parallel to the longitudinal axis thereof, said slots being movable in a rotary fashion between a loading position, in which the slots oppose said slot-shaped aperture, and a discharge position, in which material fed into said slots is discharged into said hopper, said regulator means also each including a plurality of interconnected rods, each of which is slidably mounted in one of said slots of said sleeve, said rods having a first portion having an upper surface which lies substantially flush with the outer circumferential surface of said sleeve and a second portion having an upper surface which lies substantially flush with the inner circumferential surface of said sleeve, said rods being movable between a first end position, in which said first portion thereof is disposed beneath said slot-shaped aperture, and a second end position, in which said second portion thereof is disposed beneath said slot-shaped aperture to thereby respectively permit and stop feeding of material to said hopper, said regulator means each also including control means for controlling the position of said rods;

drive means mounted on said frame for propelling at least

one of the wheels of said frame and for actuating said aerator and said feed means; and

a pair of manually-operable, frictional brake assemblies, each of which is disposed for cooperation with a different one of said rear wheels, each of said brake assemblies being movable between a non-engaged and engaged position relative to the associated rear wheel, in the latter position of which it at least frictionally retards rotation of the associated rear wheel.

4,258,635

SOIL CULTIVATION IMPLEMENT

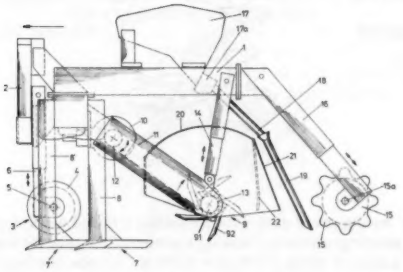
Claus Lutz, Rottweil; Bernhard Beha, Unterkirnach, and Heinz G. Nieter, Kleinweiherle 7, 7239 Epfendorf 3, all of Fed. Rep. of Germany, assignors to Claus Lutz, Rottweil; Bernhard Beha, Unterkirnach; Heinz Gernot Nieter, Epfendorf and Helmut Steinhilber, Rottweil, all of, Fed. Rep. of Germany

Filed May 3, 1978, Ser. No. 902,765

Claims priority, application Fed. Rep. of Germany, May 3, 1977, 2719713

Int. Cl.³ A01C *7/00*

U.S. Cl. 111—52 **20 Claims**



1. A soil cultivation implement comprising a frame comprising means adapting the implement to be coupled to a prime mover and including means adapted to be coupled to a source of rotary power for driving a rotor and having disposed thereon, one behind the other in the direction of travel, rotary cutters for cutting up the ground vertically, plowshare-like cutters disposed side by side for dividing the ground horizontally, a horizontal rotor having prongs and serving as a clod-breaking roller, and being adapted to be rotationally driven and a freely rotating clod packing roller for firming the ground without substantially compacting the soil; said plowshare-like cutters having cutting edges which are disposed at an acute angle with respect to one another and symmetrically with respect to the longitudinal axis and having at their front end in the working direction an angle of inclination in relation to the horizontal of about 10° to 30°; said rotor having a rotor shaft on which there are disposed in a helical manner wedge-shaped, substantially linear prongs in at least three rows spaced uniformly around the circumference of the rotor shaft, said prongs being rigidly fastened substantially tangentially on said rotor shaft and being located each on the leg of the tangent leading with respect to the direction of rotation of the rotor shaft at an angle of about 50 ° to 80° in relation to radii associated with their fastening points, the length of each prong being substantially in the proportion of about 2:1 as compared to the diameter of the rotor shaft and said prongs being pointed at their outer ends and said linear prong comprising a camfered digging end curved in a shovel-like manner in the direction of rotation; and said clod packing roller being provided on its surface with rounded teeth helically offset in relation to one another and aligned in rows around and helically across said roller for firming the surface of the soil.

4,258,636

DEVICE FOR CONTROL OF THE FRAME MOVEMENTS OF AUTOMATIC SEWING MACHINES

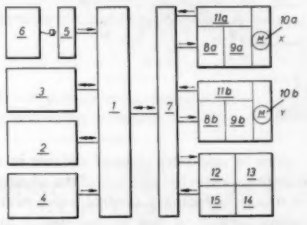
Hans Rolauffs, Krefeld, and Helmut Schäfer, Beuren, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Carl Zangs Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Filed Nov. 24, 1978, Ser. No. 963,905

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1977, 2753087

Int. Cl.³ D05B *21/00*

U.S. Cl. 112—121.12 **8 Claims**



1. A device for control of the frame movements of embroidery machines, comprising

a servomotor means for moving a workpiece frame in the x and y directions, respectively

a computer means for controlling each of said servomotor means via a finished prepared program stored in a data carrier,

microprocessor control means for transmitting path information for controlling the frame movements in the x and y directions, said microprocessor control means comprising a central processing means and a working memory,

a programmable read only memory means for recalling the path information from said working memory on time in dependency on a program of said programmable read only memory means,

digital-analog converters,

an input-output port connected between said central processing means and said digital-analog converters, said central processing means for retransmitting the recalled path information via said port to said digital analog converters,

power units constituting force amplifiers being connected to said servomotor means, respectively,

said digital-analog converters being connected to said power units, respectively.

4,258,637

MOVABLE WORKPIECE-CLAMPING ATTACHMENT FOR SEWING MACHINE

Franz Hannemann, Detmold, Fed. Rep. of Germany, assignor to Durkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,076

Claims priority, application Fed. Rep. of Germany, Fe½. 24, 1978, 2807895

Int. Cl.³ D05B *21/00*

U.S. Cl. 112—121.26 **11 Claims**

1. A device for releasably gripping a workpiece moving between a first station and a second station, comprising:

track means extending between said first and second stations;

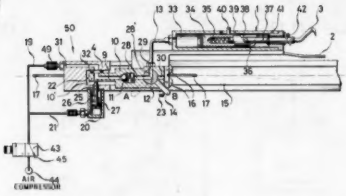
a carriage reciprocable along said track means;

a source of pressure fluid at said first station;

clamp means on said carriage provided with fluidically actuatable operating means, including a single-acting piston in a cylinder provided with an inlet channel communicating with said source in a loading position at said first station for closing said clamp means around a workpiece by the admission of pressure fluid;

biasing means including a restoring spring tending to hold

said clamp means open, said clamp means including a first jaw rigid with said carriage and a second jaw having a shaft journaled in said cylinder for rotation about an axis generally parallel to said first jaw, said piston terminating in a ramp face coacting with a projection on said shaft for rotating the latter about said axis against the force of said restoring spring resisting such rotation; and



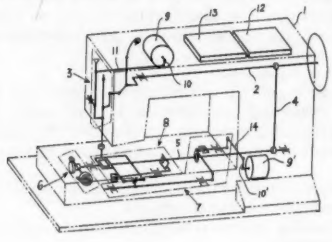
valve means in said inlet channel settable in said loading position to maintain the pressure of the admitted fluid, said valve means including a control valve reversible in an unloading position at said second station to relieve the fluid pressure for allowing said biasing means to reopen said clamp means for releasing the engaged workpiece.

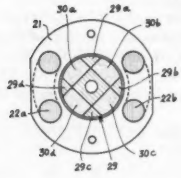
4,258,638

ELECTROMAGNETIC CONTROL DEVICE FOR SEWING MACHINE

Umeo Doyama, Tokyo, Japan, assignor to Riccar Company, Ltd., Tokyo, Japan

Filed May 7, 1979, Ser. No. 36,338
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 E **8 Claims**





1. In a sewing machine having a signal generator for producing a desired stitch pattern signal and a stitch forming mechanism actuated by said signal for forming said desired pattern, a device for receiving said signal and controlling said mechanism comprising:

a. an electromagnetic analog driver having a rotor shaft and a stator,

b. at least one pair of coils mounted on said stator for receiving said desired stitch pattern signal and generating corresponding magnetic fields,

c. a plurality of magnets attached to the periphery of said rotor in alternating polarity for interacting with said generated magnetic fields to angularly position said rotor in accordance with said stitch pattern signal, and

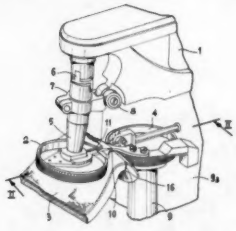
d. means coupling said rotor shaft to said stitch forming mechanism to form said selected stitch pattern.

4,258,639

WORKPIECE ADVANCING APPARATUS FOR SEWING MACHINES

Pietro Bonalumi, Cernusco sul Naviglio, Italy, assignor to Rockwell-Rimoldi, S.p.A., Milan, Italy

Filed Apr. 23, 1979, Ser. No. 32,134
Claims priority, application Italy, May 17, 1978, 23484 A/78
Int. Cl.³ D05B *27/12*
U.S. Cl. 112—322 **2 Claims**



1. An improved device for advancing a folded workpiece to the stitching needle in a sewing machine of the type for applying a seam of safety overlock stitches along a line bonding two faced portions of elastic material forming the workpiece, the improvement comprising:

(a) a pair of spaced cylindrical members (2,4) mounted for rotation in opposite directions on the machine in operative association with the stitching needle for advancing the workpiece through the stitching zone;

(b) means formed on the peripheral surface of each said cylindrical members for guiding the workpiece as it is advanced therebetween and for supporting the weight thereof defining:

(i) spaced and parallel circumferential grooves (12) extending in a plane parallel to the direction of workpiece advancement in each of said cylindrical members for receiving portions of the workpiece deformed by the cylindrical members as it is advanced therebetween.

4,258,640

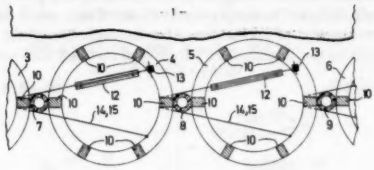
LARGE-SCALE PROTECTIVE DEVICE FOR TABULAR ICEBERGS OR FLOATING STRUCTURES

Georges L. Mougin, Paris, France, assignor to ITT Limited, Paris, France

Filed Sep. 21, 1978, Ser. No. 944,287
Claims priority, application France, Oct. 18, 1977, 77 31254
Int. Cl.³ E02B *15/04*
U.S. Cl. 114—219 **14 Claims**

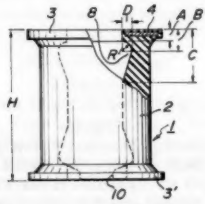
1. A large-scale protective device for floating structures, wherein the protective device comprises an assemblage of two types of units; rigid cylindrical floating towers and elastic connecting units intercoupling adjoining ones of said towers;

and cables for connecting the floating towers together, both ends of each cable being connected to the same floating tower



and passing around at least one vertical stiffener of an adjacent tower.

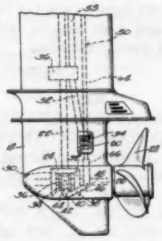
4,258,641
MARINE FENDER
Masatoshi Wakamiya, Yokohama, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Nov. 3, 1978, Ser. No. 957,499
Claims priority, application Japan, Nov. 17, 1977, 52-137231
Int. Cl.[3] B63B *59/02;* **E02B** *3/22*
U.S. Cl. 114—219 **4 Claims**



1. In a marine fender comprising a hollow cylindrical body formed of a resilient rubber block and having one end fitted to a quay wall or the like, the other end being provided with means to provide a berthing face, the improvement comprising an annular groove circumferentially extending along at least one end of the cylindrical inner wall of said hollow cylindrical body, said hollow cylindrical body having a flat outer wall, and said annular groove being quarter circular in section and including a tapered portion extending from the inner side of said quarter circle to a center cylindrical inner wall of said hollow cylindrical body.

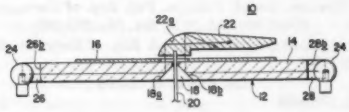
4,258,642
MARINE PROPULSION DEVICE INCLUDING AN IMPROVED SHIFT CONTROL ROD
Dennis N. Burmeister, Libertyville, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Jun. 7, 1979, Ser. No. 46,434
Int. Cl.[3] B63H *5/13, 21/26*
U.S. Cl. 440—53 **18 Claims**

12. A marine propulsion device comprising a drive shaft housing having therein a cooling water passage and an opening communicating with said cooling water passage and constituting a cooling water inlet, means for mounting said drive shaft housing for pivotal movement relative to a boat, a propeller shaft rotatably mounted in said drive shaft housing and having an axis of rotation, a propeller carried by said propeller shaft, and means for driving said propeller shaft including a shift control rod transverse to said propeller shaft and housed in said drive shaft housing, said shift control rod including a first portion, a second portion, and means for fixedly joining together said first and second shift rod portions in coaxial rela-



tion, said shift rod joining means being housed in said cooling water passage and being accessible through said opening.

4,258,643
ILLUMINATED INDICATOR GAUGE WITH ILLUMINATED POINTER
Masao Ishikawa, Yokohama; Kenji Nakamura, Yokosuka, and Akio Ajimine, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Jun. 8, 1979, Ser. No. 46,643
Claims priority, application Japan, Jun. 21, 1978, 53-84057[U]
Int. Cl.[3] G01D *11/28*
U.S. Cl. 116—286 **7 Claims**



1. An illuminated indicator gauge comprising:

a transparent plate having a face and having an opening formed therethrough;

a spindle passing through said opening of said transparent plate and being rotatable about an axis;

a pointer of a transparent material having a hub section connected to said spindle to move over the face of said transparent plate in response to rotation of the spindle about said axis and having a pointing section;

at least one light guiding plate of a transparent material integrally connected to a peripheral edge portion of said transparent plate, said light guiding plate having an end portion spaced a distance from said peripheral edge portion of the transparent plate with a round recess having a bottom;

a light source spacedly located in said round recess for producing a light which travels within said light guiding plate, said transparent plate and said pointer for the illumination of both said transparent plate and said pointer from within;

at least one first light reflecting surface formed on a wall by which the opening of said transparent plate is bounded, said first light reflecting surface reflecting the light coming thereto toward said hub section of said pointer;

a second light reflecting surface formed on the hub section of said pointer for reflecting the light from said first light reflecting surface toward the pointing section of the pointer;

third light reflecting surfaces formed on a peripheral edge section of said light guiding plate, said third light reflecting surfaces being so formed to reflect the light which enters the light guiding plate through said round recess toward the integrally connected portion where said light guiding plate and said transparent plate are integrally

connected, for focussing the light at the first light reflecting surface; and

a convex surface formed on the bottom of said round recess to constitute a convex lens so that the light rays coming thereto from said light source can travel parallelly within said light guiding plate toward said first light reflecting surface of said transparent plate.

4,258,644

DEPOSITING LATENT FINGERPRINTS AND DEVELOPMENT THEREOF

Edward J. Goettert, Oakdale, and George V. D. Tiers, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 822,066, Aug. 5, 1977, Pat. No. 4,174,409. This application Jul. 23, 1979, Ser. No. 59,608

Int. Cl.³ B05B *7/06*

U.S. Cl. 118—31.5 **4 Claims**

1. A fingerprinting pad consisting essentially of an absorbent pad at least partly saturated with a composition comprising polymeric acid of the general formula $(C_nH_{2n-x}CO_2H)_y$ where n is from 10 to 20, x is 1, 3 or 5 and y is 2 to 4 inclusive, wherein said composition moistens a finger upon contact of said finger with said pad.

4,258,645

COUPLING FOR STATIONARY AND MOVABLE VACUUM CHAMBERS

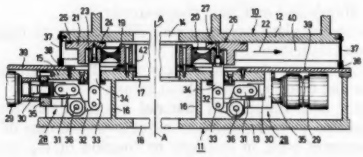
Hans Aichert, Hanau am Main; Friedrich Stark, Langenselbold; Herbert Stephan, Bruchköbel, and Otto-Horst Hoffmann, Rodenbach, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Nov. 22, 1978, Ser. No. 963,060

Claims priority, application Fed. Rep. of Germany, May 10, 1978, 2820345

Int. Cl.³ C23C *13/08*

U.S. Cl. 118—50 **5 Claims**



1. Coupling valve for joining of stationary and movable evacuatable chambers having confronting chamber walls parallelly displaceable against one another comprising first frame means fastened to one chamber wall and joined by a resilient member to second movable frame means which can be brought into engagement with the other chamber wall, said movable frame being provided with at least one actuator means for moving the movable frame with respect to the fastened frame to press the movable frame against the confronting chamber wall.

4,258,646

PRESSURIZED WIRE ENAMEL APPLICATOR CELL

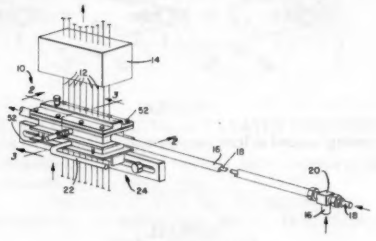
Harold A. Kloczewski, Pasadena, and Cheryl N. Schaeffer, Baltimore, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Sep. 20, 1979, Ser. No. 76,963

Int. Cl.³ B05C *3/172;* **B05D** *3/06*

U.S. Cl. 118—50.1 **12 Claims**

1. A cell for coating enamel onto a plurality of strands of bare wire in a continuous operation, said cell comprising a first vacuum chamber arranged vertically in tandem with a second externally pressurized, heat jacketed enamel chamber in the direction of wire motion through said cell, first movable seal means to permit entry of the wire into said vacuum chamber comprising an individual seal member of disc-like configuration for each wire at the entrance end of said vacuum chamber, each seal member being formed with an opening of predetermined diameter to snugly receive one of said wires, means to permit motion of said seal member throughout a plane perpendicular to the direction of wire travel through said seal member, second seal means separating said vacuum and enamel chambers from each other, die plate means at the exit end of said enamel chamber, said first and second seal means defining said vacuum chamber and said second seal means and said die plate means defining said enamel chamber, and means to pressurize said enamel chamber and to contain said enamel within its chamber under said pressure and to maintain said chamber full of enamel only.



4,258,647

APPARATUS FOR MANUFACTURING MULTI-LAYERED SEMICONDUCTOR ELEMENTS BY MEANS OF LIQUID-PHASE EPITAXY

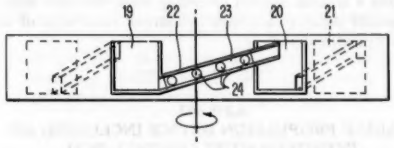
Dieter W. Pohl, Adliswil, and Hansjoerg Scheel, Kilchberg, both of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 23, 1979, Ser. No. 23,118

Claims priority, application Switzerland, Mar. 30, 1978, 3455/78

Int. Cl.³ B05C *3/04, 3/109*

U.S. Cl. 118—52 **12 Claims**



1. Apparatus for transfer of liquids between chambers of a reactor comprising:

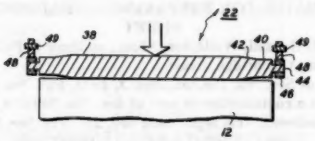
a plurality of interconnected discrete reactor chambers circumferentially spaced on a common horizontal plane, with said chambers defining an annular array disposed about a vertical axis, with said interconnection comprising conduit means extending between the bottom of one of said chambers and the top of a succeeding and adjacent second one of said chambers; and

means to rotate said chambers about said axis under sufficient speed to force a liquid to flow under centrifugal force through said conduit means from the bottom of said one chamber means to the top and into said second one of said succeeding chambers.

4,258,648
TAPERED DONOR ROLL APPLICATOR FOR ROLL FUSER

Walter F. Leising, Webster, and Kenneth R. Rasch, Walworth, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 29, 1978, Ser. No. 891,234
Int. Cl.[3] G03G *15/20*
U.S. Cl. 118—60 4 Claims

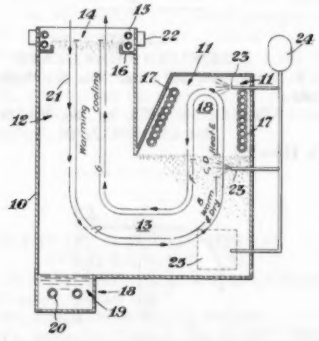


1. Roll fuser apparatus comprising:
a first roll fuser member having a silicone rubber surface thereon which surface is susceptible to swelling in the presence of liquid release material;
a second roll fuser member cooperating with said first roll fuser member to form a nip through which copy substrates carrying toner images thereon move for fixing of the toner images to said substrates;
means containing a quantity of silicone oil; and
means supported for contact by said silicone oil and for contacting substantially the entire surface of said silicone rubber surface while alternatively being capable of adjustment for contacting only a portion of said surface.

4,258,649
APPARATUS FOR COATING SURFACES

James L. Dunn, Jr., Lake Jackson; John K. Ward, Angleton, both of Tex., and Patrick H. Martin, Danville, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 589,226, Jun. 23, 1975, Pat. No. 4,007,304, and a continuation-in-part of Ser. No. 237,274, Mar. 23, 1972, abandoned. This application Jan. 6, 1977, Ser. No. 757,417
Int. Cl.[3] B05B *1/28*
U.S. Cl. 118—61 2 Claims

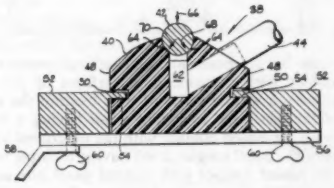


1. An apparatus for applying a coating from a volatile organic solvent, removing the solvent from said coating and recovering said solvent which comprises:
a substantially J-shaped chamber having an opening to the ambient atmosphere in the upright main leg of the J;
a condensing means interior of and adjacent said opening for condensing vapors of a solvent when filling the chamber;
a condensate collecting trough beneath said condensing means, said trough connected with a storage area;
a means for producing and supplying vapors of a liquid vaporizable solvent associated with said chamber;
a means for applying a coating composition containing a vaporizable solvent;
a means for heating articles and vapors located in the upturned short portion of the J above the turn;
a means for conveying articles to be coated into through and out of said J shaped chamber.

4,258,650
ROD HOLDER FOR COATING DOCTOR SYSTEM

Teddy A. McCrocklin, 3511 Forsythe Ave., Monroe, 71201; Carl E. McMillan, 203 Elmwood, and William M. Newman, Sr., 2000 Star Dr., both of West Monroe, La. 71291

Filed Sep. 19, 1979, Ser. No. 77,238
Int. Cl.[3] B05C *11/02*
U.S. Cl. 118—101 2 Claims



1. An elongated coating rod holder for a coating apparatus, comprising:
(a) an elongated cavity for receiving the coating rod, the cavity being formed in one exterior surface of the elongated holder and comprising at least two sealing surfaces therein, the sealing surfaces initiating at an exterior surface of the rod holder and terminating on the interior of the rod holder adjacent to each other and spaced apart therefrom;
(b) a cooling water chamber formed as a plurality of smaller chambers having an interconnecting passageway between each adjacent smaller chamber, the plurality of smaller chambers and interconnecting passageways being formed directly below the elongated cavity and initiating at the termination of the spaced apart sealing surfaces and terminating in the central portion of the rod holder;
(c) at least one cooling water inlet and one cooling water outlet formed in the rod holder and connecting the cooling water chamber; and
(d) the elongated cavity and the elongated cooling water chamber being formed in-line with the axis of rotation of the coating rod with the sealing surfaces being formed so that a pressure exerted on the coating rod during a coating operation would be transmitted downwardly through the coating rod and outwardly to act to seal the rod member against the sealing surfaces thereby preventing leakage of water from the water chamber to the exterior of the rod holder.

4,258,651
APPARATUS FOR APPLYING SEALANT TO THE IRREGULAR SIDE EDGES OF A PANEL

Brice N. Knudtson, 93100 McArthur La., Chesire, Oreg. 97419; Stanley B. Knudtson, 93022 Highway 99, and Byron L. Knudtson, 93517 Prairie Rd., both of Junction City, Oreg. 97448

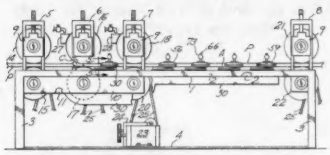
Filed Sep. 20, 1979, Ser. No. 77,755
Int. Cl.[3] B05C *1/02, 11/02*
U.S. Cl. 118—114 8 Claims

1. An apparatus for surface impregnating a tongue and groove panel having upper and lower faces and irregular sides with each side being a composite of vertical, horizontal and inclined surfaces, said apparatus comprising,
a base including panel transfer means,

applicator means on said base and applying a liquid to the panel faces,

spreader means stationed along the paths of the panel side surfaces to disperse liquid thereover,

side applicator rolls stationed in series along the base and each series in the path of a panel side with rolls acting sequentially on the panel sides, the rolls of each series being of irregular annular configuration, a first series of rolls treating the groove side of the panel and including a roll having a vertical outer wall for biased contact with a vertical panel side surface, a roll having multiple vertical walls for biased contact with panel vertical side surfaces,



roll means having horizontal and inclined annular walls for contact with corresponding surfaces of the panel groove side, a second series of rolls treating the tongue side of the panel and including a roll having a vertical inner wall for biased contact with the outermost vertical surface of the panel tongue, a roll having multiple vertical walls for biased contact with vertical panel side surfaces above and below the panel tongue, roll means having horizontal and inclined annular side walls for contact with corresponding surfaces of the panel tongue, and

adjustable biasing means acting on said side applicator rolls and said roll means urging same toward the panel sides.

4,258,652

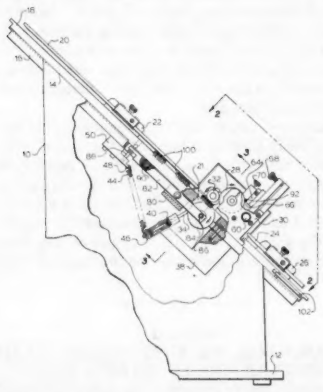
DIP TOP COATING APPARATUS

Ben S. Stillman, 11165 La Paloma Dr., Cupertino, Calif. 95014

Filed Jun. 1, 1979, Ser. No. 44,371

Int. Cl.³ B05C *1/02*

U.S. Cl. 118—249 **8 Claims**



1. Apparatus for coating the top surface of dual in-line packaged (DIP) devices comprising:

a support chassis;

elongated narrow rail means affixed to said chassis and having one end disposed substantially higher than the other, said rail means being adapted to provide a continuous track along which DIPs may move in rail straddling disposition from said one end to the other under the influence of gravity;

inking means including an inking roller and a transfer roller disposed at an inking station along the length of and above said rail means such that said transfer roller engages the tops of DIPs moving down said rail means; and

means disposed beneath said rail means for engaging and resiliently urging said DIPs upwardly relative to said rail means and into compressive contact with said transfer roller as they pass thereunder.

4,258,653

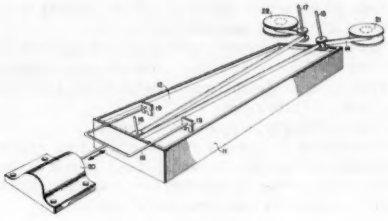
APPARATUS FOR PREPARING A GRADIENT DYED SHEET

Harold O. Buzzell, Wollaston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 756,355, Jan. 3, 1977, Pat. No. 4,190,418, which is a continuation-in-part of Ser. No. 649,049, Jan. 14, 1976, abandoned. This application Sep. 28, 1979, Ser. No. 79,965

Int. Cl.³ B05C *3/04, 3/12;* B05D *5/06*

U.S. Cl. 118—419 **7 Claims**



1. Apparatus for providing a dye density gradient to a web which comprises:

(a) a container adapted to retain a dye bath,

(b) supply means and take up means to said web associated with said container,

(c) means associated with said container for continually conducting said web longitudinally into said dye bath container and progressively transversely submerging said web in said dye bath, and

(d) means associated with said container for conducting said web out of said dye bath.

4,258,654

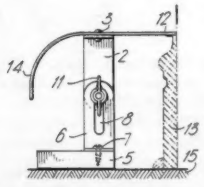
BASEBOARD PAINT GUARD

Robert F. Ivankovich, 262 First Ave. N., Welland, Ontario, Canada

Filed Oct. 23, 1978, Ser. No. 953,729

Int. Cl.³ B05C *21/00*

U.S. Cl. 118—504 **2 Claims**



1. A baseboard paint guard for protecting a baseboard from paint during the painting of a wall surface above the baseboard, said paint guard comprising, in combination a normally horizontal shield made of a relatively thin sheet-like material secured to stand means and having a generally straight, relatively thin longitudinal edge portion whose thickness corresponds to

the thickness of said sheet-like material, said stand means being of the type adapted to stand on a generally horizontal surface such as floor, and to support the shield at a vertical spacing from said horizontal surface, said stand means including adjustment means for selectively adjusting the magnitude of said spacing while maintaining a generally horizontal position of said shield, wherein all components forming said adjustment means are arranged to be disposed entirely within a shielded space limited by said shield, by said generally horizontal surface, and, on sides, by a generally vertical projection of the contour of said shield as viewed in plan, when the guard is in operable position.

4,258,655

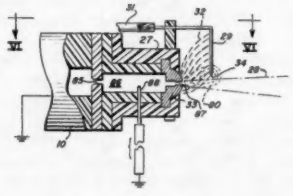
ELECTROSTATIC SPRAY APPARATUS

Thomas L. Bagby, Washington; Gary L. Demeny, Delavan, and Robert G. Smead, St. Charles, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 678,844, Apr. 21, 1976, abandoned. This application Mar. 6, 1979, Ser. No. 18,019

Int. Cl.[3] **B05B** *1/04, 5/02*

U.S. Cl. 118—635 **15 Claims**



1. An electrostatic painting apparatus **(10)** for painting an article **(35)** with a liquid paint, comprising:

first means **(15,12,27,33)** for projecting the paint in a plurality of atomized particles in a preselected spray pattern **(28)**, the first means **(15,12,27,33)** including a gun body **(27)** and a nozzle **(33)** connected to the gun body **(27)**; and

second means **(30,29)** including an electrode **(29)** for establishing an electric field **(32)** between the nozzle **(33)** and the electrode **(29)**, imparting an initial electrical charge of one polarity to the plurality of atomized particles at the nozzle **(33)**, establishing a zone of ions **(80)** of an opposite polarity to said one polarity in the pathway of the preselected spray pattern **(28)** issuing from the nozzle **(33)**, and neutralizing and reversing the polarity of a portion of the charged particles and providing a plurality of diversely charged particles.

4,258,656

DEVICE IN SPRAY BOOTHS FOR E.G. SPRAY-PAINTING

Karl Hällgren, Huddinge, Sweden, assignor to Aktiebolaget Carl Munters, Sollentune, Sweden

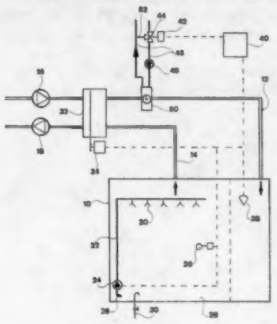
Filed Jun. 21, 1978, Ser. No. 917,488

Claims priority, application Sweden, Jun. 23, 1977, 7707308

Int. Cl.[3] **B05C** *15/00*

U.S. Cl. 118—666 **10 Claims**

1. A device for use with a plurality of spray booths intended for spraying of articles passed by atmospheric air wherein air containing turbulent dust particles ejected from a spray gun during the spraying operation is forced to pass through a water curtain, said device including air inlet and outlet ducts communicating with each of said spray booths, a common heat exchanger disposed between said inlet and outlet ducts, and impulse means responsive to lifting of the spray gun for passing said air through the water curtain practically immediately on



the start of operation of the gun until a predetermined delay after shut off of the operation of said gun.

4,258,657

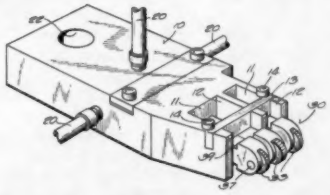
PAINT STRIPER

DeWayne A. Fritz, Kewaskum, Wis., assignor to Regal Ware, Inc., Kewaskum, Wis.

Filed Mar. 2, 1979, Ser. No. 16,844

Int. Cl.[3] **B05C** *1/08, 1/16*

U.S. Cl. 118—710 **6 Claims**



1. In a stripe applying head a plurality of stripe applying wheels rotatably mounted in respective non-rotatable head members, respective biasing means applying outward pressure to each head and thereby to the periphery of the respective wheels, a single stop mounted to limit the response of all of said head members to said biasing means, a tube extending from each said head member to the corresponding biasing means, a body member surrounding the tubes and containing a separate reservoir touching each said tube, at lease one hole in each tube at a location to interconnect the tube with the respective reservoir only when the head member and tube are moved against said bias a predetermined distance and to be out of alignment with said reservoir when said head responds to said biasing means sufficiently to be stopped by said stop member, and separate respective means supplying striping material to each said reservoir under low pressure to be applied by the respective wheels.

4,258,658

CVD COATING DEVICE FOR SMALL PARTS

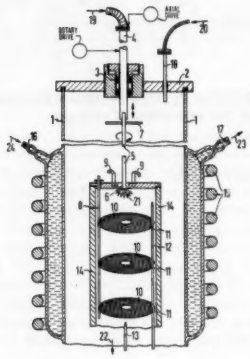
Alfred Politycki, Ottobrunn; Konrad Hieber, and Manfred Stolz, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 24, 1979, Ser. No. 87,886

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1978, 2849240

Int. Cl.[3] C23C *11/14*

U.S. Cl. 118—719 7 Claims



1. An apparatus for the simultaneous chemical vapor deposition treatment of small parts which comprises:

a support frame able to retain small parts for treatment;

a receptor chamber vertically surrounding and receiving said support frame and having a removable lid portion nesting thereon and attached to said support frame;

a reactor able to receive and surround said receptor and having double outer walls forming an enclosed jacket for said reactor;

an induction coil surrounding and adjacent to said reactor for heating said receptor;

a cover plate having at least two throughbores and being received by the top portion of said reactor;

a gas feed line inserted through one throughbore of said cover plate, forming a vacuum-tight seal therewith, terminating within said reactor with means for both axial and rotational movement within said reactor and communicating with said receptor chamber through an aperture in the removable lid thereof;

at least one cooling and cleansing gas lead line inserted and sealed in a separate throughbore of said cover plate;

at least two thermal elements placed within said receptor and in close proximity to said support frame, having means for remotely indicating the ambient temperature of said support frame; a support means attached to a portion of said gas feed line lying within said reactor; and a coupling device attached to the removable lid portion of said receptor, able to be received upon and coupled with said support means, whereby the removable lid portion and attached support frame may be withdrawn from said receptor by axial movement of the gas feed line when the coupling device is coupled with said support means.

4,258,659

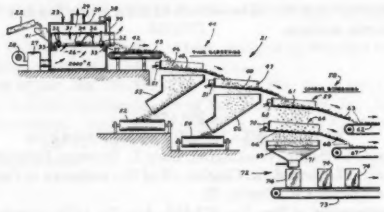
ANIMAL LITTER AND PROCESS AND STRUCTURE FOR MAKING SAME

George W. Rowell, Pine River, Minn., assignor to Quality Bedding and Litter, Inc., Minneapolis, Minn.

Continuation of Ser. No. 704,127, Jul. 7, 1976, abandoned. This application Apr. 30, 1979, Ser. No. 34,342

Int. Cl.[3] A01K *1/015*

U.S. Cl. 119—1 8 Claims



1. An apparatus for making animal litter from wood particles having random sizes including fine size, intermediate size, and coarse size particles comprising: dryer means having a housing, said housing having spaced generally upright first and second side walls and a heating chamber, said second side walls having a hole, drum means having a passage for accommodating wood particles and an inlet end and an outlet end in communication with said passage, said inlet end being located adjacent said first side wall, said outlet end projected through the hole in the second side wall, means mounted on the first and second side walls of the housing rotatably supporting the drum means in the heating chamber for rotation about the longitudinal axis of the drum means, drive means mounted on the housing for rotating the drum means about the longitudinal axis thereof, hopper means mounted on the first side wall for directing wood particles into the inlet end of the passage of the drum means, said wood particles on rotation of the drum means about the longitudinal axis thereof moving through said passage to the outlet end thereof, means for supplying heated gas to said heating chamber to dry the wood particles moving through said passage of the drum means, first screening means for receiving dry wood particles from the outlet end of the drum means and for separating fine size wood particles from coarse size and intermediate wood particles, second screening means for receiving the intermediate and coarse size wood particles from the first screening means and for separating the intermediate size wood particles from the coarse size wood particles, and means for collecting the intermediate size particles separated from the second screening means for use in animal litter.

4,258,660

ANIMAL LITTER COMPOSITION

Harold C. Pris, LaMoure, N. Dak., and Leo Froelich, 101 Kenwood Ct., Thief River Falls, Minn. 56701, assignors to Leo Froelich, Thief River Falls, Minn.

Filed Nov. 8, 1979, Ser. No. 92,532

Int. Cl.[3] A01K *29/00*

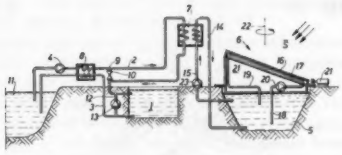
U.S. Cl. 119—1 8 Claims

1. An animal litter composition consisting essentially of straw, sunflower hulls, dried alfalfa, and a binder such as clay, said straw being from the class consisting of grain and grass straws including flax, rye, barley, oats, wheat, durm, triticle, and rice hulls, said dried alfalfa consisting of between approximately 10-30% by weight of the litter.

4,258,661
FISH POND PLANT

Peter H. E. Margen, Nyköping, Sweden, assignor to Studsvik Energiteknik AB, Nyköping, Sweden

Filed May 16, 1979, Ser. No. 39,564
Claims priority, application Japan, May 29, 1978, 53-64195
Int. Cl.[3] A01K *61/00*
U.S. Cl. 119—3 5 Claims

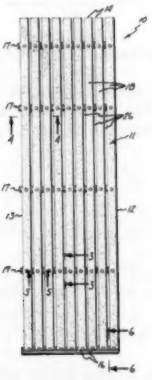


1. In a fish pond plant comprising a fish pond, a first conduit for conducting sea water from the sea to the fish pond, a second conduit for conducting water from the pond to the sea, and pump means for circulating sea water through the pond via said conduits, the improvements that a water magazine is associated with a solar collector adapted to heat the magazine water, a first heat exchanger is arranged in said first and second conduits to transfer heat from the sea water leaving the pond to the fresh sea water entering the first conduit, a second heat exchanger is connected to the first conduit and adapted to heat sea water fed to the first conduit by heat exchange with warm magazine water, a shunt line connects said first and second conduits and a second pump means in the shunt line is arranged to re-circulate part of the water fed from the pond back into the pond.

4,258,662
SLOTTED PANEL ASSEMBLY

Kenneth L. Schafer, Rte. 3, Box 73, Le Sueur, Minn. 56058

Filed Aug. 23, 1979, Ser. No. 68,937
Int. Cl.[3] A01K *1/00*
U.S. Cl. 119—28 17 Claims

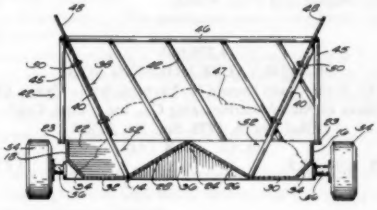


1. A slotted panel floor assembly for covering a support surface comprising: a plurality of longitudinal members, each longitudinal member having a longitudinal core and plastic means reinforced with fibers covering the entire core, said longitudinal member having an upper surface, a bottom, and downwardly and inwardly converging longitudinal sides; a plurality of longitudinally spaced transverse members extended transversely across the bottom of the longitudinal members, each transverse member having a transverse core, plastic means reinforced with fibers covering the entire transverse core, each transverse member having a top, a bottom engageable with said surface to support the panel assembly on said surface, upwardly and inwardly converging sides upwardly directed first projections, spaced along the top of the transverse member and an end second projection extended laterally away from an outside longitudinal member to space the panel assembly from an adjacent panel assembly, each first projection having upwardly converging sides engageable with the convering sides of adjacent longitudinal members to laterally space the adjacent longitudinal members from each other and locate the longitudinal members in side-by-side longitudinal positions relative to each other, said upwardly converging sides of each first projection being generally continuous with the downwardly and inwardly converging sides of the longitudinal members; and means connecting the transverse members to the longitudinal members and holding the longitudinal members between adjacent first projections on each of the transverse members.

4,258,663
LIVESTOCK FEEDER

John Schoessow, Pulaski, Wis., assignor to Schoessow, Inc., Pulaski, Wis.

Continuation of Ser. No. 625,656, Oct. 24, 1975, abandoned.
This application Dec. 26, 1978, Ser. No. 973,532
Int. Cl.[3] A01K *5/00*
U.S. Cl. 119—58 8 Claims



1. A mobile livestock feeder for dispensing a variety of feeds, including baled feed and fine feeds, said feeder comprising

a relatively shallow, open-top tank including a solid bottom and an opposed pair of side walls and an opposed pair of end walls, both extending upwardly from the periphery of said bottom and having a generally vertically extending upper portion,

said tank bottom having a raised central portion including a pair of oppositely inclined, longitudinally extending wall portions each of which extend downwardly and outwardly towards respective of said side walls and terminate in a lower edge portion spaced inwardly from respective of said side walls and a pair of longitudinally extending base wall portions extending generally horizontally between and integrally connecting respective of said side walls and said inclined wall portions, said base wall portions cooperating with said side walls and said inclined wall portions to define feeding troughs situated wholly inside said side walls for holding feed,

an outer framework including a plurality of horizontally-spaced outer frame members disposed in parallel relationship and extending upwardly at a slant from at least said tank side walls whereby adjacent pairs of said outer frame members define an angled first feeding opening through which individual livestock, either young or full-grown, can project its head and consume feed held in a respective one of said feeding troughs and which require the livestock to cock its head for projecting through said first feeding opening, thereby discouraging it from dragging loose feed through said first feeding opening, said outer framework further including generally horizontally upper

frame members connected to the upper ends of said outer frame members,

an inner rack including a plurality of horizontally-spaced, inner frame members having a lower end rigidly supported from said tank bottom at a location spaced inwardly from respective of said tank side walls, extending upwardly and outwardly at an incline toward respective of said upper frame members and having an upper end connected to respective of said upper frame members, adjacent pairs of said inner frame members defining a second feeding opening through which at least full-grown livestock, with its head projecting through a first feeding opening, can also project its head to consume feed held in said inner rack,

front and rear wheels supporting said tank for over-the-ground travel of said feeder with said tank walls at a height which is comfortable for both young and full-grown livestock to project its head through one of said first openings and comfortably consume feed from said feeding troughs while standing on the ground outside said feeder,

said front wheels including a pair of wheels mounted on axle means carried by a steering assembly connected to the front end of said tank, and

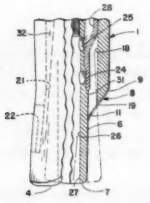
said steering assembly including a steering member mounted for rotation about a vertical axis spaced forwardly of said tank to permit 90° turning of said feeder and tongue means connected to said steering member for towing said feeder and turning said front wheels.

4,258,664

FLARED VALVE HOUSING BODY

Frank W. Atchley, and Donald W. Vorbeck, both of Napa, Calif., assignors to Atco Manufacturing Co., Inc., Napa, Calif.

Filed Jun. 4, 1979, Ser. No. 45,017
Int. Cl.³ A01K *7/00*
U.S. Cl. 119—72.5 **1 Claim**



1. An improved demand delivery watering valve for animals including a housing having an end adapted for connection to a water supply and a distal end, internal valving means mounted within said housing including an elongated animal actuated control device having a free distal end mounted for pivotal movement from a closed position to an angular actuated position and means for automatically closing said internal valving means; said improvement comprising:

a. said housing extends beyond said distal end of said control device and terminates immediately adjacent thereto and is formed with a cutout portion exposing an upper portion of said control device for actuation by an animal;

b. said control device is mounted coaxially within and spaced from an inner wall of said housing;

c. said distal end of said housing is flared outwardly over a substantial portion of the length thereof so as to be parallel to said control device when said control device is in said fully actuated position and forming a downwardly sloping portion; and

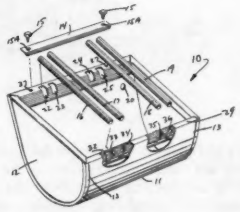
d. said housing in said flared distal end is formed with an elongated slot of substantial length parallel to said control device in the lower portion of said housing beginning at a point adjacent the beginning point of said downwardly slanting portion.

4,258,665

ADJUSTABLE FOAL FEEDER

Warren R. Coots, 2363 Hialeah Cir., Norco, Calif. 91760

Filed May 14, 1979, Ser. No. 38,669
Int. Cl.³ A01K *5/00*
U.S. Cl. 119—61 **6 Claims**



1. An adjustable animal feeder comprising,

trough means including front, back and end members,

said front and back members each having upper edges thereof which are folded at least twice on the respective members to form an inverted U-shaped lip around the perimeter of said trough means and extending inwardly thereof,

a plurality of apertures formed in the inner leg surface of said inverted U-shaped lip in said upper edges,

said apertures in one of said upper edges extending beyond the fold therein thereby to form slots which communicate with the closed end of the inverted U-shaped lip,

at least one spacer member adapted to be selectively placed in said apertures so as to extend between said front and back members, and

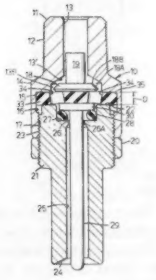
keeper means adapted to be fastened over at least one of said slots to retain said spacer member in said slot.

4,258,666

ADJUSTABLE ANIMAL WATERING OR DRINKING DEVICE

William E. Edstrom, 28324 E. Main, Waterford, Wis. 53185

Filed Mar. 12, 1979, Ser. No. 19,881
Int. Cl.³ A01K *7/00*; **F16K** *7/12, 31/00*
U.S. Cl. 119—72.5 **13 Claims**



1. An adjustable flow watering device for animals, comprising:

a housing having a passage therein communicating with a downwardly extending tubular member having an open lower end;

a resilient deflectable apertured diaphragm mounted in said passage;

upper and lower valve seats located above and below said diaphragm, respectively, each valve seat having an opening therethrough;

upper and lower valve members engageable with said upper and lower valve seats, respectively, and engageable by said diaphragm; and

an elongated valve stem extending downwardly from said lower valve member through said tubular member to a point adjacent the lower end thereof;

said diaphragm operating when undeflected to maintain said lower valve member seated in sealing engagement with said lower valve seat and to locate said upper valve member in an open position relative to said upper valve seat;

said valve stem being movable in response to engagement of its lower end by an animal to cause said lower valve member to be unseated to thereby permit water flow through said passage and out said open lower end, and to cause said lower valve member to move said diaphragm to thereby effect movement of said upper valve member toward said upper valve seat and thereby limit the water flow through the opening in said upper valve seat;

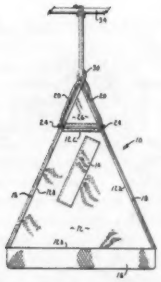
the tension of said diaphragm causing said upper valve member to resume its said open position and causing said lower valve member to resume its said sealing engagement with said lower valve seat upon release of said valve stem by the animal to thereby halt the flow of water.

4,258,667

ANIMAL DUST BAG

Helen E. Eshnaur, St. Joseph, and Jack I. Shugart, St. Louis, both of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Oct. 9, 1979, Ser. No. 82,707
Int. Cl.³ A01K *29/00*
U.S. Cl. 119—159 **5 Claims**



1. A dust bag arrangement for applying powdered insecticide to animals and adapted to receive a container for said insecticide, said arrangement comprising:

a bag member having a bottom, sides and a top and adapted to receive said container;

tie means coupled with said member at opposite sides of the latter and extending upwardly from said top for securing said member from an overhead support;

means for releasably holding said tie means together at a point intermediate the point of coupling with said member and the ends of the tie means removed from said bag member; and

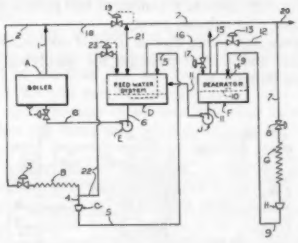
flap means coupled with said bag member and said releasable holding means and substantially covering the area defined by the top of said member and said tie means when the latter are held by said releasable holding means.

4,258,668

CLOSED PRESSURIZED FEED WATER SYSTEM SUPPLYING FLASH STEAM TO A LOWER PRESSURE PROCESS

Martin Bekedam, 106 Zander Dr., Orinda, Calif. 94563

Filed Dec. 26, 1978, Ser. No. 972,796
Int. Cl.³ F22D *33/00*
U.S. Cl. 122—1 R **2 Claims**



1. A closed pressurized water system for a boiler with no flash steam heat loss in the high pressure system and supplying flash steam to a lower pressure process, comprising:

(a) a boiler;

(b) a high pressure process with a steam line interconnecting it with the boiler;

(c) a first steam trap for receiving condensate from the high pressure process;

(d) a feed water system having a pressure vessel with a first condensate line interconnecting it with said steam trap for returning the condensate from said trap to said feed water system;

(e) means for feeding fresh make up water to said feed water system;

(f) means for removing a predetermined amount of flash steam from said feed water system and delivering it to a lower pressure process;

(g) whereby a sufficient pressure drop in said feed water system is attained to cause said steam trap to function and return the hot condensate back to the feed water system from the high pressure process; and

(h) means for returning the hot condensate from said feed water system back to said boiler to complete the closed system without any flash steam loss in the high pressure system.

4,258,669

TWO-STROKE CYCLE GASOLINE ENGINE

Masaaki Noguchi, Nagoya; Yukiyasu Tanaka, and Isao Igarashi, both of Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 6, 1979, Ser. No. 17,965
Claims priority, application Japan, Jul. 5, 1978, 53-81561
Int. Cl.³ F02B *25/08, 33/04;* F02D *39/04*
U.S. Cl. 123—51 BA **6 Claims**

1. A two-stroke cycle gasoline engine, comprising:

(a) at least one two-stroke cycle power cylinder-piston assembly, including:

(1) a power cylinder;

(2) first scavenging port means in fluid communication with said power cylinder proximate one axial end thereof for generating a substantially uniform, cylindrical, strongly swirling flow of scavenging mixture in said power cylinder;

(3) second scavenging port means in fluid communication with said power cylinder proximate said one axial end thereof for generating a substantially uniform flow of scavenging mixture in said power cylinder, said flow being up to a weak swirling flow having substantially

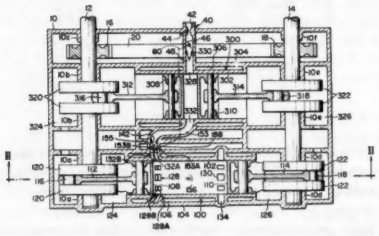
less strength than the swirling flow of said first scavenging port means;

(4) first and second passages in fluid communication with said first and second scavenging port means, respectively;

(5) exhaust ports in fluid communication with said power cylinder proximate the other axial end thereof; and

(6) two horizontally opposed pistons disposed in said power cylinder for reciprocal motion, one of said pistons opening and closing said first and second scavenging port means and the other of said pistons opening and closing said exhaust ports;

(b) a scavenging pump device in fluid communication with said first and second passages for supplying scavenging mixture thereto; and



(c) control valve means incorporated in said first passage for closing said first passage when delivery ratio of said engine is below a predetermined value determined by intermediate positions of an intake throttle valve causing scavenging of said power cylinder by the scavenging mixture flow generated by said second scavenging port means to effect layered contact between said scavenging flow and exhaust gases existing in said power cylinder, and for opening said first passage when the delivery ratio of said engine is at as well as above said predetermined value causing scavenging of said power cylinder by the combination of scavenging mixture flow generated by said first and second scavenging port means forming a radially internal core portion of said combined scavenging flow.

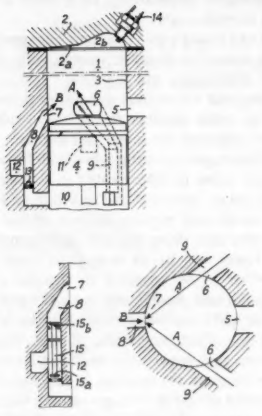
4,258,670

METHOD FOR FEEDING A COMBUSTION CHAMBER OF A TWO-STROKE ENGINE OF THE CONTROLLED IGNITION TYPE AND ENGINE APPLYING SAID METHOD

Georges Thery, 6, Place du General Leclerc, 93380 Pierrefitte, France (93380)

Continuation of Ser. No. 844,378, Oct. 21, 1977, abandoned.
This application Mar. 28, 1980, Ser. No. 135,092
Int. Cl.³ F02B *33/04*
U.S. Cl. 123—73 B **25 Claims**

1. A reciprocating two-stroke engine of the controlled-ignition type including a combustion chamber defined by a piston, a cylinder, and a cylinder head whereby said piston reciprocates within said cylinder between a compression stroke as said piston moves towards said cylinder head and an intake stroke as said piston moves away from said cylinder head, said combustion chamber comprising a pair of air inlet ports, a fuel and air mixture inlet port, and an exhaust port, said air inlet ports, said fuel and air mixture inlet port, and said exhaust port being displaced from said cylinder head in said cylinder, said pair of air inlet ports being symmetrically disposed in said combustion chamber with respect to said exhaust port and being oriented so that air exiting therefrom is directed towards the wall of said cylinder opposite said exhaust port, a pair of air intake conduits for feeding air without fuel into said combustion chamber through said pair of air inlet ports, a fuel and air mixture intake conduit for feeding a fuel and air mixture into said combustion chamber through said fuel and air mixture inlet port, connecting means for connecting said air intake conduits and said fuel and air mixture intake conduit with at least one excess pressure device so as to feed said air and said fuel and air mixture into



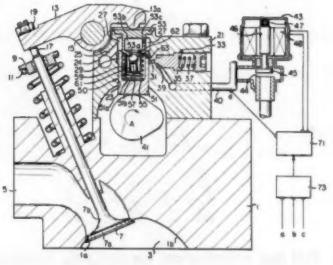
said combustion chamber under an excess pressure condition throughout said entire intake stroke of said piston in said cylinder, and fuel supply means for supplying fuel to said fuel and air mixture intake conduit.

4,258,671

VARIABLE VALVE LIFT MECHANISM USED IN AN INTERNAL COMBUSTION ENGINE

Masaaki Takizawa, Mishima; Kazuo Takahashi, and Noboru Matsubara, both of Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 6, 1979, Ser. No. 9,965
Claims priority, application Japan, Mar. 13, 1978, 53-27797
Int. Cl.³ F01L *1/34*
U.S. Cl. 123—90.16 **8 Claims**



1. A variable valve lift mechanism for cooperating with a crankshaft-synchronized cam and a rocker arm to actuate a valve in an internal combustion engine, said mechanism comprising:

an outer case having a pressure chamber formed therein, one end of said outer case abutting said cam;

an inner case having an oil chamber formed therein and being slidably and sealingly disposed in said outer case, one end of said inner case abutting one end of said rocker arm;

a first check valve disposed between said pressure chamber and said oil chamber for controlling one-way fluid communication from said oil chamber to said pressure chamber;

an electromagnetic valve actuated in response to changes in operating conditions of said engine, said electromagnetic valve being in fluid communication with said pressure chamber;

a second check valve disposed between said pressure chamber and said electromagnetic valve for controlling one-way fluid communication from said pressure chamber to said electromagnetic valve; and

a pressure sensor disposed between said second check valve and said electromagnetic valve for sensing the fluid pressure therein and for permitting actuation of said electromagnetic valve to maintain said sensed fluid pressure at a predetermined level.

4,258,672

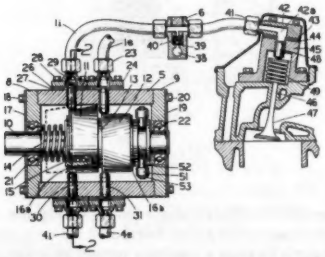
VARIABLE LIFT CAMMING APPARATUS AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Calvin N. Hietikko, 2186 Glenshire, Pontiac, Mich. 48055

Filed Oct. 20, 1978, Ser. No. 953,020

Int. Cl.³ F01L *1/34*

U.S. Cl. 123—90.18 **7 Claims**



1. A variable lift camming apparatus for use in an internal combustion engine provided with at least one combustion chamber having associated intake and exhaust valves, comprising:

a camshaft driven in a timed relation with the speed of said engine, said camshaft being mounted for rotational movement within an outer housing;

said camshaft being provided with a first cam member for variably controlling the lift and duration of said intake valves and a second cam member for variably controlling the lift and duration of said exhaust valves, said first and second cam members being mounted for axial sliding movement on said camshaft;

shifting means adapted to cooperate with said first and second cam members, said shifting means being operated in response to the speed of said engine to axially slide said first and second cam members to selected positions on said camshaft to permit said first and second cam members to variably control the lift and duration of said intake and exhaust valves;

each of said intake and exhaust valves being provided with associated valve operating means to open each of said valves for a predetermined lift duration period, said valve operating means being adapted to cooperate with said first and second cam members respectively;

each said valve operating means further including a cam follower member and hydraulic means for hydraulically transmitting motion imparted by each said cam follower member to a valve stem of each of said valves;

each said cam follower member comprising an axially slidable lifter mechanism, the lower portion of said lifter mechanism including a contact piece adapted to contact a selected one of said first and second cam members;

said contact pieces of said lifter mechanisms each having a curved surface in contact with one of said cam members and being rotatable about an axis extending perpendicular to the respective one of said cam surfaces;

each said hydraulic means comprising a fluid line having a first end thereof connected adjacent the upper portion of one of said lifter mechanisms and a second end thereof extending into close proximity with one of said valves;

with said second end of each said fluid line being connected to and adapted to operate a hydraulic cylinder, each said hydraulic cylinder being operatively connected to a valve stem of one of said valves to effect operation of the latter said valve;

a first substantially flexible seal member disposed between said upper portion of each said lifter mechanism and said first end of the fluid line adjacently connected thereto, each said first seal member being adapted to be deformed by said upper portion of its associated said lifter mechanism when the latter said lifter mechanism is in a raised position;

a second substantially flexible seal member disposed between said second end of each said fluid line and its associated said hydraulic cylinder, each said second seal member being adapted to be deformed by pressurized fluid within its associated said fluid line when its associated one of said first seal members is deformed by its associated one of said lifter mechanisms; and

each said hydraulic cylinder being adapted to be actuated by said deformation of its associated said second seal member to open said valve; and wherein

said camshaft comprises a splined shaft adapted to have said first and second cam members mounted thereon for rotation with said camshaft.

4,258,673

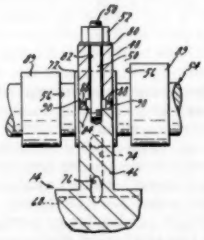
CAM LUBRICATION

Richard R. Stoody, Jr., New Haven, and Ellsworth C. Adams, Birmingham, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Apr. 2, 1979, Ser. No. 26,394

Int. Cl.³ F01M *1/06, 9/10*

U.S. Cl. 123—90.34 **7 Claims**



1. In an engine having a cylinder head and a pressurized oil gallery extending therein, a lubricating apparatus for an active surface of a camshaft lobe comprising a bearing cap member attached to the cylinder head and defining therewith a bore through which a bearing portion of the camshaft extends for rotative support, the camshaft bearing portion being located adjacent a cam lobe which rotates with the camshaft adjacent a side surface of the bearing cap member, first and second passage means in the cylinder head and bearing cap member respectively, the first passage means communicating directly with the oil gallery, a small dimension opening with respect to the second passage means opening through the side surface of the cap member and being communicated with the second passage, the first and second passage means intersecting the bore between the cylinder head and bearing cap member at circumferentially spaced locations, means rotative with the camshaft portion for interconnecting first and second passage means during only a portion of each rotation of the camshaft,

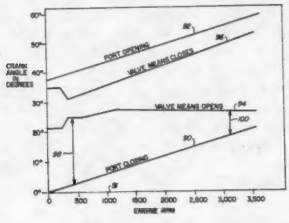
the small dimension opening extending through the side surface of the cap member being located radially outward from the active surface of the lobe and with an axis directed radially inward at the active surface whereby the stream of oil is intermittently directed against the cam lobe.

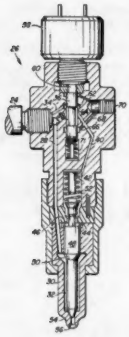
4,258,674

ENGINE FUEL INJECTION SYSTEM

George D. Wolff, P.O. Drawer, Winter Haven, Fla. 33880

Filed Mar. 28, 1979, Ser. No. 24,691
Int. Cl.[3] F02M *39/02;* F02B *3/00*
U.S. Cl. 123—446 59 Claims





1. A fuel injection system for an internal combustion engine including a fuel pump for periodically transmitting pressurized pulses of fuel through a conduit, said system comprising:

a. electronic circuit means coupled to the engine for measuring engine performance and for generating an electrical output signal to control engine performance; and

b. fuel injector valve means coupled to said electronic circuit means and to said conduit for converting the electrical output signal into mechanical displacements between an open and a closed position to inject measured amounts of pressurized fuel into a cylinder of said engine at predetermined variable time intervals independent of the arrival or termination of the pressurized pulses of fuel transmitted through the conduit to the fuel injector valve means.

52. A method of injecting a measured quantity of fuel into a cylinder of an internal combustion engine at predetermined variable time intervals comprising the steps of:

a. generating pressurized pulses of fuel at time intervals having fixed relationship to the position of the engine crank shaft;

b. transmitting the pressurized pulses of fuel through a conduit to a fuel injector valve;

c. comparing actual engine operating parameters with desired engine operating parameters to generate an injector control signal; and

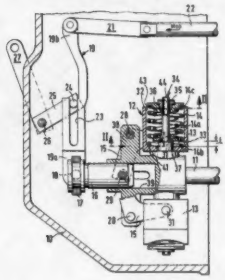
d. opening the fuel injector valve a predetermined controllable time after the fuel pressure pulse has arrived at the fuel injector valve in response to the injection control signal and closing the fuel injector valve after a predetermined desired injection time in response to the injection control signal independent of the arrival or termination time of the fuel pressure pulse at the fuel injector valve.

4,258,675

REGULATOR APPARATUS SUCH AS A CENTRIFUGAL GOVERNOR FOR INTERNAL COMBUSTION ENGINES

Werner Volz, Nürtingen; Friedrich Rüsseler, Ditzingen; Ernst Ritter, and Reinhard Schwartz, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 12, 1979, Ser. No. 11,575
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2807026
Int. Cl.[3] F02D *1/04*
U.S. Cl. 123—374 9 Claims



1. A spring controlled regulator having two spring supports, at least one compression spring interposed between two of said spring supports forming a regulator spring, an actuating member which transfers regulator motions onto one end of at least one spring which tends to cause a change in the length of said spring, said actuating member being tiltable about a transverse axis disposed perpendicularly to the longitudinal axis of said at least one spring, said at least one compression spring being inserted in an installed position between at least two spring supports such that a point on the front face of the end of said spring end, which point transfers the largest spring force component onto the spring support associated with said tiltable actuating member, lies in a plane extending parallel to the longitudinal axis of the spring and penetrates the transverse axis of said actuating member for the purpose of eliminating an undesired tilting movement of said actuating member caused by at least one spring force exerted eccentrically on the spring supports.

4,258,676

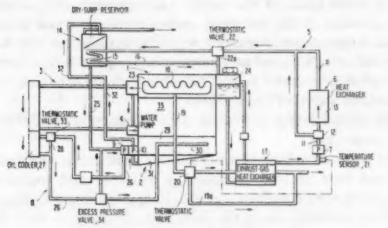
HEATING SYSTEM PRODUCING WARM AIR FOR MOTOR VEHICLES DRIVEN BY AN INTERNAL COMBUSTION ENGINE

Heinz Lamm, Esslingen St. Bernhardt, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Nov. 28, 1978, Ser. No. 964,168
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2753716
Int. Cl.[3] F02N *17/02*
U.S. Cl. 123—142.5 R 14 Claims

1. A warm-air heating installation for a motor vehicle driven by an internal combustion engine having a line circulatory means through which a heat carrier flows, and a lubricating oil circulatory means, the heating installation comprising a first heat-exchange means adapted to be acted upon by atmospheric air for effecting a heat transfer from the heat carrier flowing

within the line circulatory means, and a second heat-exchanger means operatively connected in the line circulatory means for absorbing exhaust gas heat of the internal combustion engine and for transferring exhaust gas heat to the heat carrier, characterized in that means are provided for establishing a heat-transferring connection at least between the lubricating oil circulatory means of the internal combustion engine and the line circulatory means.

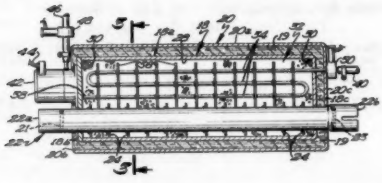


4,258,677

ENGINE HEATING DEVICE

Nicholas A. Sanders, 109½ E. 2nd St., Hastings, Minn. 55033

Filed Mar. 29, 1979, Ser. No. 24,960
Int. Cl.³ F02M *17/02*
U.S. Cl. 123—142.5 **12 Claims**



1. An Engine Heating Device for use with an internal combustion engine having an exhaust system and an engine coolant system, the device being used to warm said engine prior to starting the comprising:

a fluid-tight elongated canister having first and second ends and a cavity therein;

an exhaust gas conduit for carrying engine exhaust gasses during engine operation passing through said cavity of said canister from said first end to said second end, said conduit having an inlet end and an outlet end and being connectable to said exhaust system;

means for thermally isolating said exhaust gas conduit from said exhaust system when exhaust gasses are not flowing;

a cooling fluid conduit having an inlet and an outlet, said cooling conduit passing through said cavity and being connectable to said engine coolant system;

means for selectively thermally isolating said cooling fluid conduit;

means for circulating coolant through said coolant conduit;

means for thermally insulating said canister; and

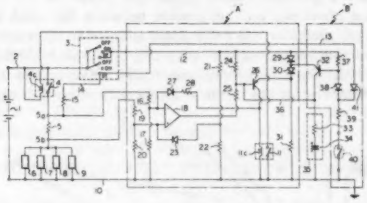
said cavity containing a quantity of phase change material having a melting point greater than 100° F

4,258,678

CONTROL APPARATUS FOR GLOW PLUGS PROVIDED FOR A DIESEL ENGINE

Yoshiaki Abe, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1979, Ser. No. 14,165
Claims priority, application Japan, Feb. 22, 1978, 53-018601
Int. Cl.³ F02P *19/02*
U.S. Cl. 123—179 H **4 Claims**



1. A control apparatus for glow plugs provided in a diesel engine, comprising:

an electric source for supplying an electric current;

relay switch means arranged between said electric source and said glow plugs, and having a normally open contact;

first electric circuit means for applying a predetermined level of an electric voltage from said electric source to said glow plugs via said normally open contact of said relay switch means;

key switch means having an OFF position, an ON position and a Starting Position, said key switch means being connected to said electric source;

an electric resistor element connected between said Starting Position of said key switch means and said glow plugs;

second electric circuit means for applying a low level of said electric voltage from said electric source to said glow plugs via said Starting Position of said key switch means and said electric resistor element, said first and second electric circuit means being arranged in parallel with one another;

temperature detecting circuit means for detecting a predetermined temperature level of said glow plugs, said temperature detecting circuit means being operated when said key switch means is moved from said OFF position to said ON position and to said Starting Position; and

prohibiting circuit means for prohibiting a supply of said electric current from said electric source to said glow plugs, said prohibiting circuit means including a thermal sensing switch means for sensing the temperature of the diesel engine, said prohibiting circuit means being operated when said key switch means is moved to said ON position and when said thermal sensing switch means senses a warmed up condition of said diesel engine, said normally open contact of said relay switch means being forcedly maintained at an open position when said thermal sensing switch means senses the warmed-up condition of said diesel engine.

4,258,679

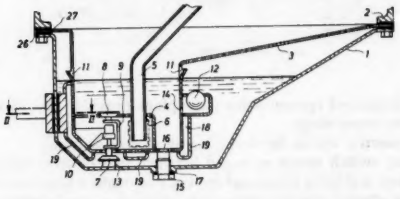
DEVICE FOR CONTROLLING THE LUBRICATING OIL TEMPERATURE OF A COMBUSTION ENGINE HAVING AN OIL CONTAINER

Wulf Leitermann, Bad Wimpfen, Fed. Rep. of Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Neckarsuim, Fed. Rep. of Germany

Filed Apr. 18, 1979, Ser. No. 31,161
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1978, 2817743
Int. Cl.³ F01M *5/00*
U.S. Cl. 123—196 AB **5 Claims**

1. A device for controlling the lubricating oil temperature of

a combustion engine having an oil container for the oil supply of the lubricating oil cycle of the combustion engine and an oil pump, suction means and return means for directing the oil from the container through the combustion engine and returning the oil to the container in the lubricating oil cycle, comprising; means for mounting the device in the oil container on the combustion engine, an oil catch basin mounted in communication for receiving the return flow of the oil from the return means and the catch basin having a smaller volume than the oil container, a thermostatically controlled valve on the catch basin and providing communication between the catch basin and the oil container, the catch basin adapted to be connected to the suction means and the oil pump of the combustion engine and the thermostatically controlled valve positioned so that the suction means communicates with the oil container



and/or the oil catch basin depending on the position of the thermostatically controlled valve, surfaces on the interior of the catch basin forming an intermediary chamber at the lowest point of the oil catch basin and adapted to communicate with the suction means of the combustion engine, the thermostatically controlled valve being positioned in the intermediate chamber and shiftable to provide communication between the suction means and the oil catch basin at low temperature and communication between the suction means and the oil container during operating temperature, at least one overflow opening in the oil catch basin for communication between the oil catch basin and the oil container, a float valve in the oil catch basin for communication between the oil catch basin and the oil container which opens when the oil supply drops off to provide communication between the oil catch basin and the oil container.

4,258,680

RECIPROCATING ENGINE WITH CYLINDRICAL COMBUSTION CHAMBER

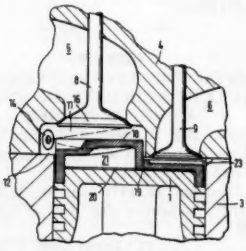
Konrad Eckert, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 8, 1979, Ser. No. 18,558

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1978, 2809968

Int. Cl.³ F02B *19/04*

U.S. Cl. 123—254 **4 Claims**



1. A reciprocating internal combustion engine comprising an engine block defining a cylinder,

a piston moving reciprocatingly in said cylinder,

a cylinder head mounted in association with said engine block,

intake and exhaust valves,

said cylinder, said piston and said cylinder head jointly with a valve plate of the intake valve defining a combustion chamber at the top dead center position of said piston,

said combustion chamber lying substantially entirely within said cylinder head and having the shape of a right circular cylinder one end face of which is defined by a disc of said intake valve of the engine,

said piston being provided with a cap portion defining a projection,

said projection having a substantially flat surface defining an end face of said combustion chamber and including a recess which defines a guide channel having a light curvature substantially in the direction of rotary air flow in the combustion chamber beginning at or near a point of fuel flow from the injection nozzle with relatively great depth and then becomes gradually more shallow until it merges with the top of the projection at its far end substantially at the opposite side of the combustion chamber,

said projection substantially constituting the other end face of said combustion chamber at top dead center of said piston,

the interior of said projection defining a void which serves as a thermal barrier, and

a fuel injection nozzle disposed in a side wall of said combustion chamber and so oriented as to emit a jet of fuel substantially perpendicular to the cylindrical axis of said combustion chamber along said guide channel.

4,258,681

FUEL SYSTEM FOR A MIXTURE-COMPRESSING, SPARK IGNITED FOUR CYCLE INTERNAL COMBUSTION ENGINE WITH CHARGE STRATIFICATION

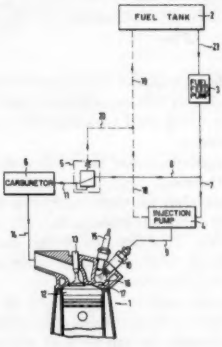
Dusan Gruden, Ditzingen, and Uwe Markovac, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 24, 1978, Ser. No. 954,122

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1977, 2752885

Int. Cl.³ F22B *21/30*

U.S. Cl. 123—277 **3 Claims**



1. A fuel system for a mixture-compressing, spark-ignited four cycle internal combustion engine with charge stratification of the type wherein the largest portion of the charge is introduced into a main combustion chamber as a lean fuel-air mixture through at least one inlet valve by a main mixture forming system comprising a carburetor, and wherein the remainder of the charge is introduced into an auxiliary combustion chamber joined to said main combustion dhamber via

a firing channel by an auxiliary combustion chamber injection pump and injection nozzle, the improvement comprising:

a fuel tank,

a single fuel feed pump connected to said fuel tank

means for supplying fuel from said fuel feed pump directly to said injection pump,

a pilot type pressure reducing valve, and

means for supplying fuel from said fuel feed pump to said main mixture forming system via said pressure reducing valve, whereby said single fuel feed pump is able to supply fuel to said injection pump at a first pressure and said main mixture forming system at a second pressure that is lower than said first pressure.

4,258,682

SWITCHING CONTROL CIRCUIT, ESPECIALLY FOR MOTOR VEHICLE ENGINES

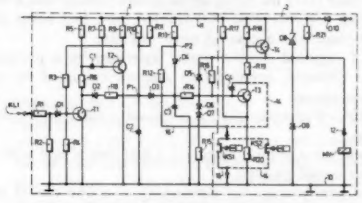
Wolfgang Maisch, Ville d'Avray, and Alain Constanty, Arnouville-les-Gonesse, both of France, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 9, 1977, Ser. No. 794,885

Claims priority, application Fed. Rep. of Germany, May 7, 1976, 2620181

Int. Cl.³ F02D *33/00*

U.S. Cl. 123—333 **14 Claims**



1. In a fuel supply carburetor system of an internal combustion engine, the engine having a throttle valve and a system including:

normal fuel administering means;

separate electromagnetic shut-off means which functions independently of said fuel administering means and arranged for interrupting the flow of a combustible substance to the engine cylinders; and

electrical means connected to said electromagnetic valve shut-off means, for actuating said electromagnetic valve shut-off means; the improvement comprising: an apparatus for actuating the electromagnetic valve shut-off means when the engine speed is above a predetermined speed, which speed is above the idle speed of the engine, and when the throttle valve is closed, to thereby produce the noted flow interruption, the apparatus comprising:

a primary circuit connected to receive signals related to engine speed (rpm) and including electrical charging and discharging means which generate a signal for continuously closing said electromagnetic valve means in the event the engine speed is above said predetermined speed; p1 a driver circuit connected to the primary circuit;

a power switching circuit connected in series with said electromagnetic valve shut-off means, and responsive to said driver circuit; and

vacuum operated switch means connected to the driver circuit, said vacuum operated switch means being disposed to sense induction tube pressure upstream of the throttle valve when the throttle valve is in a closed position and thereby the position of the throttle valve, and generating a signal for opening said electromagnetic valve shut-off means in the event the induction tube pressure indicates an open position of said throttle valve, wherein the electromagnetic valve shut-off means in a first instance is actuated through the driver circuit and produces the noted flow interruption when the primary circuit receives a speed signal indicating that the engine speed is greater than said predetermined speed and the throttle valve is closed; and further wherein the electromagnetic valve shut-off means in a second instance interrupts the flow of fuel upon shut-off of said electrical means; and further wherein the electromagnetic valve shut-off means in a third instance allows fuel flow when the engine speed is above the predetermined speed and when the throttle valve is open.

4,258,683

ELECTRONIC IGNITION CONTROL APPARATUS

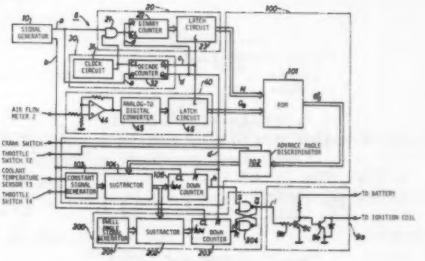
Tadashi Hattori, Okazaki; Mamoru Kobashi, Aichi; Tooru Kawase, Toyota, and Yoshiki Ueno, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Apr. 10, 1978, Ser. No. 895,013

Claims priority, application Japan, Apr. 14, 1977, 52-42874

Int. Cl.³ F02P *5/04*

U.S. Cl. 123—416 **1 Claim**



1. An electronic ignition control apparatus for an internal combustion engine having an output shaft rotated by a piston, an ignition coil adapted to generate a spark voltage upon de-energization of the primary winding thereof, a spark plug activated by the spark voltage to ignite the air-fuel mixture metered into a combustion chamber of said engine so as to operate said piston, and an exhaust gas recirculation device to recirculate exhaust gas into the combustion chamber of said engine, the control apparatus comprising:

a first signal generator for producing a first signal at a predetermined angular interval of rotation of said output shaft;

a second signal generator for producing a second binary signal indicative of an instant rotation speed N of said output shaft in response to the first signal;

a third signal generator for producing a third binary signal indicative of an instant amount Ga of the sucked air into the combustion chamber of said engine in response to the first signal;

a fourth signal generator coupled with said exhaust gas recirculation device for producing fourth and fifth signals respectively indicative of activation and deactivation of said exhaust gas recirculation device;

a single memory means for storing first data indicating an optimum spark advance angle for activation of said spark plug in relation to the instant rotation speed N and the instant amount Ga of the sucked air in consideration with exhaust gas recirculation of the combustion chamber of said engine, which optimum spark advance angle is given by a value $\theta_{ij}°$ which is indicated in a specific range defined by rotation speeds N_{i-1} and N_i and amounts Ga_{j-1} and Ga_j of the sucked air in the form of a table or map, said memory means further storing second data indicating an optimum spark advance angle for activation of said spark plug in relation to the instant rotation speed N and the instant amount Ga of the sucked air, which optimum spark advance angle is give by a value $\theta_{ij}°$ which is indicated in

the specific range represented in said table or map, said memory means producing a sixth binary signal representing the first-named optimum spark advance angle in accordance with the second and third binary signals in response to the fourth signal and producing a seventh binary signal representing the second-named optimum spark advance angle in accordance with the second and third binary signals in response to the fifth signal;

a timing signal generator for generating a timing signal in accordance with one of the sixth and seventh binary signals; and

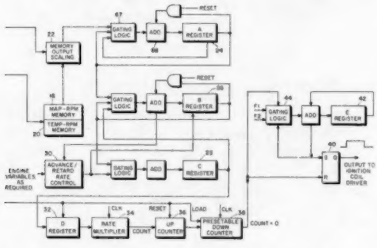
means for de-energizing the primary winding of said ignition coil in response to the timing signal.

4,258,684

DIGITAL IGNITION TIMING CONTROLLER

John J. Schira, Westland, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed May 16, 1978, Ser. No. 906,309
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—416 **16 Claims**



1. A digital electronic spark timing control for an internal combustion engine having a spark ignition system with energy storing means and means for discharging stored energy to generate ignition spark, comprising

means for measuring and encoding in digital form parameters descriptive of the conditions of operation of said engine;

means for storing digitally a multi-valued function of two independent ones of said engine parameters, said function defining the angle relative to the crankshaft angle of said engine at which ignition is to occur;

means for retrieving from said digital storing means the value of said function stored therein for said measured values of said two independent engine parameters;

means providing reference signals indicative of reference positions of the crankshaft of said engine;

a source of constant frequency clock signals;

rate multiplier means receiving said clock signals and providing at the output thereof a fractional part of said clock signals applied thereto;

means receiving said retrieved value of said function for controlling said rate multiplier means so that said fraction relating the output to input thereof is proportional to said retrieved value of said function;

first counter means synchronized with said reference signals for accumulating a count of the output of said rate multiplier means during the interval between two successive ones of said reference signals;

second counter means synchronized with said reference signals and receiving the count accumulated by said first counter means, said second counter means also receiving said clock signals and decrementing at said clock signal rate the count received from said first signal means; and

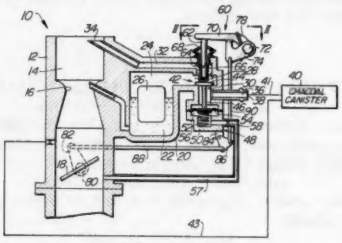
means for initiating an ignition spark for said engine whenever the count contained by said second counter means is decremented to a predetermined number.

4,258,685

CARBURETOR FOR INTERNAL COMBUSTION ENGINES

Hisaharu Arai, Nagoya; Masami Sato, and Kunio Kadowaki, both of Oobu, all of Japan, assignors to Aisan Industry Co., Ltd., Ohbu, Japan

Filed Apr. 30, 1979, Ser. No. 34,668
Claims priority, application Japan, May 9, 1978, 53-61970[U]
Int. Cl.³ F02M *33/02*
U.S. Cl. 123—520 **5 Claims**



3. A carburetor for internal combustion engines, comprising:

a carburetor body including an air intake passage and a float chamber for receiving fuel therein, said fuel being in a liquid phase and a gaseous phase therein;

a pair of opposed coaxial ports, separated by a predetermined distance, opening into a space occupied by said gaseous phase;

a throttle valve controllably disposed within said intake passage;

a first vent passage for connecting a first one of said ports to said air intake passage;

a second vent passage for connecting a second one of said ports to a fuel vapor absorption device;

a valve movably disposed between and coaxial with said first and second ports, said valve being effective to controllably close one of said ports and open the other of said ports substantially concurrently;

valve control means responsive to pressure conditions indicative of a particular engine operating condition for positioning said valve so as to open said first port and close said second port, and otherwise for positioning said valve so as to close said first port and open said second port,

an elongated push rod coaxially disposed with respect to said first port and having an end thereof opposed said valve and another end thereof resistively linked to said throttle, a spring being effective to bias said push rod away from said valve when said throttle is within a first predetermined degree-of-opening range to permit the position of said valve to be controlled by said valve control means, and resistively engaging said valve when said throttle is within a second predetermined degree-of-opening range to maintain said first port open and said second port closed, thereby suppressing the positioning function of said valve control means.

4,258,686

COMBUSTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Isao Matsuno, Hachioji, and Hisamitsu Yamazoe, Oume, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1976, Ser. No. 680,032
Claims priority, application Japan, May 2, 1975, 50-53485
Int. Cl.³ F02B *47/08, 23/00*
U.S. Cl. 123—568 **5 Claims**

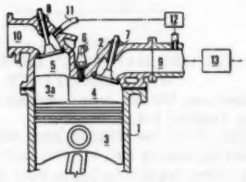
1. A method for combustion in internal combustion engines of a lean air-fuel mixture with exhaust gas recirculation in a dividable combustion space between a cylinder head and a

stroke reciprocating piston with a sub-piston projecting therefrom, the latter insertable into a recess formed in the cylinder head for dividing the combustion space when the piston reaches a position near the top dead center of the piston stroke into a first combustion chamber and a second combustion chamber, comprising the steps of

supplying a lean air-fuel mixture to the combustion space,

recirculating a portion of exhaust gases from the combustion space into the lean air-fuel mixture to be supplied to the combustion space,

inserting the sub-piston into the recess dividing the combustion space into the first combustion chamber and the second combustion chamber yet with a clearance therebetween at a beginning of the division of the combustion space into the first and second combustion chambers with a higher compression ratio in the second combustion chamber and a lower compression ratio in the first combustion chamber at a position near the top dead center of the stroke of the piston,



injecting a part of the mixture in the second combustion chamber through the clearance into the first combustion chamber by the effect of the higher compression ratio in the second combustion chamber during the beginning of the division of the combustion space into the first and second combustion chambers causing a turbulence flow of air-fuel mixture into the first combustion chamber having the lower compression ratio and simultaneously igniting the mixture in the first combustion chamber,

subsequently separating and openly communicating the first and second combustion chambers by a downward expansion stroke of the piston withdrawing the sub-piston from the recess causing flame in the first combustion chamber to now for the first time propagate into the region of the second combustion chamber by torch ignition to then first ignite the mixture in the second combustion chamber, thereby to perform a two-stage combustion in the first and second combustion chambers, respectively.

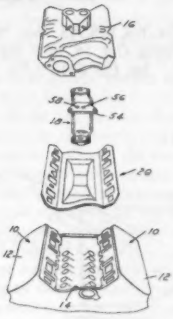
4,258,687

ENGINE WITH INTEGRAL MOUNTED EGR COOLER

Jerry L. Mauch, and Howard A. Aula, both of Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 9, 1979, Ser. No. 83,015
Int. Cl.[3] F02B *47/08*
U.S. Cl. 123—570 **6 Claims**

1. An internal combustion engine of the V-type having a dual bank of cylinder blocks joined at the bottom crankcase end and spaced laterally from each other at their top cylinder head ends to provide a V-shaped valley therebetween, the valley nestledly receiving therein in a mating manner a single engine intake manifold connecting the blocks, the intake manifold including an exhaust gas recirculation (EGR) system, and an engine coolant cooled EGR gas cooler mounted integral to the underside of the manifold in the valley and connected to



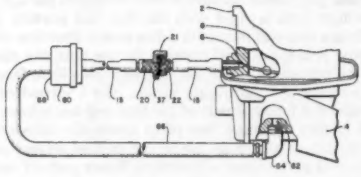
the EGR system for cooling of the EGR gases by engine coolant.

4,258,688

TIME DELAY VALVE

Donel R. Olson, Huntington Beach, Calif., assignor to Olson Engineering, Inc., Huntington Beach, Calif.

Continuation of Ser. No. 878,637, Feb. 17, 1978, Pat. No. 4,165,982. This application Jan. 22, 1980, Ser. No. 114,238
Int. Cl.[3] F02M *23/04*
U.S. Cl. 123—587 **6 Claims**



1. A vacuum control system for reducing exhaust pollutants in an internal combustion engine, comprising:

an intake manifold maintained under partial vacuum by said engine;

a carburetor in communication with said intake manifold including a throttle valve pivotally mounted therein;

a vacuum advance port located adjacent said throttle valve providing a variable vacuum signal as a function of engine performance conditions;

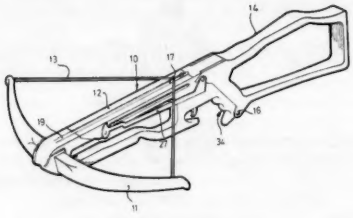
a vacuum modulated air bleed means connected between said vacuum advance port and said intake manifold to selectively increase or decrease the amount of ambient air introduced into said intake manifold in response to said variable vacuum signal; and

means connected between said vacuum modulated air bleed means and said vacuum advance port for controlling the vacuum change rate of said variable vacuum signal from said vacuum advance port to said air bleed means, said means delaying an increase in said vacuum signal encountered during moderate acceleration engine operating conditions to slowly increase the amount of ambient air introduced into said intake manifold, and rapidly communicating a decrease in said vacuum signal encountered during high acceleration engine operating conditions to rapidly decrease the amount of ambient air introduced into said intake manifold.

4,258,689
CROSS BOWS

Bernard T. Barnett, 3, Goldthorn Crescent, Wolverhampton, England

Continuation of Ser. No. 855,955, Nov. 29, 1977, abandoned.
This application Oct. 24, 1979, Ser. No. 87,779
Int. Cl.[3] F41B 5/00
U.S. Cl. 124—25 2 Claims



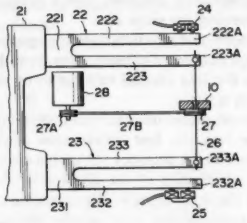
1. A cross bow comprising:
a stock which includes a butt and a fore end portion having a guide surface for a bolt,
a bow prod supported by the fore end portion,
a string having opposite ends attached to corresponding ends of the bow prod,
a releasable catch for holding the string at a cocked position spaced rearwardly from the bow prod when the bow is cocked,
a trigger means depending from the fore end portion and operatively associated with said catch for effecting release of the string therefrom,
cocking means for engaging the string and drawing the string from a rest position to said cocked position, and
a hand grip which comprises two elongated parts, a first of which parts is rigid with the fore end portion, extends from a rear end thereof in a downward direction when the bow is in the normal position for use with the guide surface horizontal, has a rear face and has a front face which faces toward the trigger means, and a second of which parts is a forward part of the butt and has a front face,
and further including first pivot means for connecting the cocking means to an upper end of said second part and second pivot means adjacent to lower ends of said parts for connecting said parts for relative pivoting movement about a pivot axis perpendicular to the respective lengths of said parts,
whereby the butt can be used as a lever by pivoting the second part away from the first part to draw the string to the cocking position,
pivoting of the second part toward the first part being limited by engagement of said front face of the second part with the rear face of the first part, and
the respective lengths of the first and second parts being parallel to each other when said front face of the second part is engaged with said rear face of the first part.

4,258,690
MACHINING APPARATUS UTILIZING OSCILLATION OF TUNING FORK

Akira Takahashi, Tokyo, Japan, and Yoshiro Ono, No. 3-7-1101; 3-chome, Kitaaoyama, Minanto-ku, Tokyo, Japan, assignors to Yoshiro Ono, Tokyo, Japan

Filed Sep. 6, 1979, Ser. No. 72,933
Int. Cl.[3] B28D 5/00
U.S. Cl. 125—30 WD 4 Claims

1. A machining apparatus comprising a mounting base, a pair of tuning forks secured to said mounting base at roots thereof and having a same natural frequency, oscillating legs for said tuning forks extending generally in parallel to each other and being opposed to each other in a direction of oscillation of said tuning forks, a machining tension string in a tense condition between forward ends of ones of said oscillating legs of said tuning forks, and at least one driver associated with a forward end of another oscillating leg of one of said tuning forks for

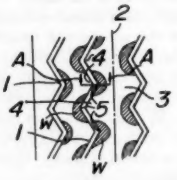


driving said tuning forks in resonant oscillation, whereby the motions of both ends of said string are completely tuned resulting in a completely parallel reciprocation of said string free of deflection.

4,258,691
PNEUMATIC TIRE HAVING AN IMPROVED UNEVEN WEAR RESISTANCE

Osamu Nakayama, Mitaka, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation of Ser. No. 798,548, May 19, 1977, abandoned.
This application Jun. 4, 1979, Ser. No. 45,465
Claims priority, application Japan, May 19, 1976, 51/56628
Int. Cl.[3] B60C 11/04
U.S. Cl. 152—209 R 6 Claims



1. A pneumatic tire having improved uneven wear resistance comprising a plurality of tread grooves and tread-ground contact areas separated from each other by said tread grooves, said tread-ground contact area having an outwardly projected edge projecting from an inward edge and facing towards the tread grooves, that part of said outwardly projected edge which is located nearest the crown center of the tire having a rubber thickness gradually decreasing towards the tip of said edge when the tire is uninflated, and said rubber thickness being substantially constant when said tire is inflated with standard pressure.

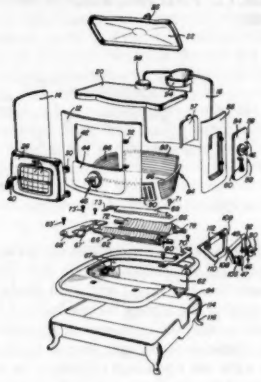
4,258,692
COMBINATION WOOD AND COAL STOVE

Ralph E. Mackey, Everett, Wash., assignor to Washington Stove Works, Everett, Wash.

Filed Jan. 30, 1979, Ser. No. 7,912
Int. Cl.[3] F24C 1/00; F23H 7/08, 7/10
U.S. Cl. 126—60 12 Claims

1. In a solid fuel burning stove having enclosure means for confining the solid fuel undergoing combustion and exhaust means for removal of gaseous products of combustion, the combination of a first door on the enclosure means for opening to permit introduction and distribution of aggregate solid fuel in the form of granules, lumps and the like into the enclosure means , a second door on the enclosure means for opening to

permit introduction of elongated sections of long solid fuel into the enclosure means, and rotatable grate means mounted inside the enclosure means for supporting said solid fuel undergoing combustion, said grate means being adapted for adjustment to support said aggregate solid fuel or said long solid fuel, said enclosure means defining a width and depth of said stove and



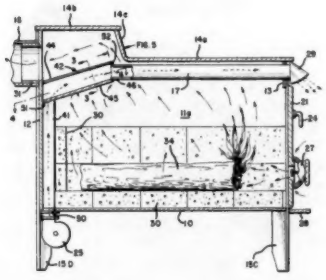
including a door side panel defining said depth and on which said second door is mounted by hinge means, and a front panel defining said width and on which said first door is mounted by hinge means, said first door being provided with a bell draft for controlling entrance of air therethrough, and said second door being provided with a bell draft for controlling entrance of air therethrough.

4,258,693

WOOD BURNING STOVE

Arthur L. Baker, R.D. #1, Lewisberry, York County, Pa. 17339

Filed Oct. 6, 1978, Ser. No. 949,104
Int. Cl.³ F24B *3/00, 1/14*
U.S. Cl. 126—67 **7 Claims**



1. An improved stove for providing heated air to a room or similar area, of the type comprising an enclosed fire chamber having front and rear walls, opposite side walls, a generally horizontal bottom and a top of which a major portion is generally horizontal, draft inlet means at the front of the fire chamber, a hearth at the bottom of the fire chamber for receiving wood or similar combustible material to be burned, and a flue having an opening of predetermined cross-sectional area at the rear of the fire chamber and near the top thereof, wherein the improvement comprises:

an enclosed air chamber within the fire chamber and having a lower portion and an upper portion;

the lower portion of the air chamber communicating with the ambient air at the bottom of the stove and extending upwardly therefrom adjacent the rear wall of the fire chamber to a point below the flue, where it communicates with the upper portion;

the upper portion of the air chamber having upper and lower walls, at least the upper wall being in sealing engagement with the opposite side walls and rear wall of the fire chamber and extending upwardly toward the front of the fire chamber at an acute angle with the horizontal to a point spaced from both the top and the front wall of the fire chamber, the minimum cross-sectional area of the opening defined by the upper wall and the top and opposite side walls of the fire chamber being at least about equal to the cross-sectional area of the flue opening;

the forward end of the upper wall of the air chamber's upper portion being substantially vertically above the lowermost portion of the flue opening;

at least one air pipe extending generally horizontally within and near the top of the fire chamber, one end of the pipe communicating with the upper end of the air chamber and the other end opening to the ambient air at the front of the stove,

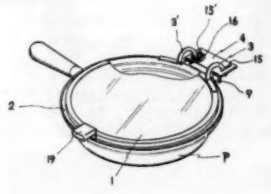
whereby the flow of hot gases rising from a fire in the fire chamber will be such that the gases contact the surface of the air pipe and both the lower and the upper walls of the upper portion of the air chamber.

4,258,694

FRYING PAN WITH MECHANISMS FOR PREVENTING OIL SPLASHING AND FIRE OCCURRENCE

Kyosuke Kato, 58-22, Gejohcho, Kasugai City, Aichi Prefecture, Japan

Continuation-in-part of Ser. No. 908,669, May 23, 1978. This application Apr. 13, 1979, Ser. No. 29,695
Int. Cl.³ F24C *15/20*
U.S. Cl. 126—299 C **3 Claims**



1. A frying pan and cover combination for minimizing oil splashings and the occurrence of fire comprising:

(A) a frying pan having an upwardly concave configuration that includes upwardly extending side walls that terminate in an upper perimeter edge portion,

(B) a transparent cover plate for said frying pan, said cover plate having an area slightly less than the area within the boundaries of said upper perimeter edge portion of said frying pan,

(C) a circumferential passageway between the outer perimeter of said transparent cover plate and the inner perimeter of said frying pan when said transparent cover plate is in a closed position with respect to said frying pan, said passageway serving as an outlet for gases and vapors generated in a frying pan, and

(D) means for pivotally connecting said cover plate to said frying pan, said means including

(1) a first bearing member on a portion of the upwardly extending side wall of said frying pan and extending outwardly therefrom, said first bearing member including at least two generally vertical bearing surfaces,

(2) a second bearing member positioned outwardly from the periphery of said transparent cover plate, said second bearing member including at least two vertical bearing surfaces that are adapted to slideably engage the said vertical bearing surfaces of said first bearing

member in such a manner that said second bearing member can easily and quickly be lifted out of engagement with said frying pan at its bearing member, and

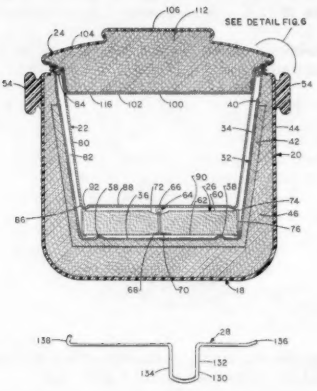
(3) means for pivotally connecting said transparent cover plate to said second bearing member whereby the cover plate can be pivoted from an open position away from the frying pan to a closed position overlying the frying pan or to an intermediate stationary position, said pivotal connecting means permitting removal of the transparent cover from said frying pan along with said second bearing member.

4,258,695

STORED HEAT COOKING UTENSIL

D. John McCarton, Everett, Wash., and Vrle T. Minto, P.O. Box 486, Altaville, Calif. 95221, assignors to Vrle T. Minto, Altaville, Calif.

Filed Dec. 8, 1977, Ser. No. 858,782
Int. Cl.³ F24H *7/00*
U.S. Cl. 126—375 **1 Claim**



1. Stored heat cooking utensil comprising:

(a) a heat storage element having a bottom surface and means for lifting it;

(b) an insulating outer container having an opening in its top and an interior surface with a bottom for supporting the heat storage element;

(c) a cooking vessel having an opening in its top and receivable within the outer container above the heat storage element and having a surrounding side wall with two openings diametrically opposite one another;

(d) an insulating lid having an outer container contacting portion which encloses the outer container to prevent the escape of heat; and

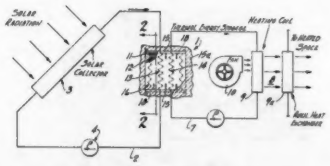
(e) a combined heat storage element and cooking vessel lifting handle including an elongated member having a resilient central loop and two oppositely directed projecting ends on either side of the loop each engagable in the openings in the wall of the cooking vessel from the interior of the vessel and having an end of one of the projecting ends which has an angular projection for engagement in the heat storage element lifting means in order to lift the heat storage element by use of the handle.

4,258,696

PASSIVE THERMAL ENERGY PHASE CHANGE STORAGE APPARATUS

Raj Gopal, Brown Deer, Wis., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Filed Apr. 5, 1978, Ser. No. 893,259
Int. Cl.³ F24H *7/00;* **F28D** *13/00*
U.S. Cl. 126—400 **16 Claims**



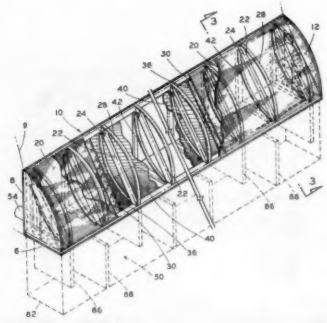
1. A passive thermal storage apparatus comprising a closed container, a supercoolable material within said container and adapted to change between liquid and solid states, a continuously operable passive nucleating means secured to the container and located within the container in continuous contact with the supercoolable material, said passive nucleating means being operable with the container stationary in response to slight disturbance of the liquid relative to the nucleating means for continuously biasing the supercoolable material into nucleation and freezing to positively suppress supercooling of material in the liquid state and to release thermal energy, and heat transfer means for transfer of heat to and from the supercoolable material and wherein said nucleating means includes a plurality of sharp pointed rods secured within the container. within the container.

4,258,697

PNEUMATIC COLLECTION, STORAGE AND TRANSFER OF SOLAR HEAT

Rodger H. Flagg, 1415 Lynn Ave., Fort Wayne, Ind. 46805

Filed Mar. 15, 1979, Ser. No. 20,795
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—430 **16 Claims**



1. An apparatus for pneumatically collecting and storing heat from sunlight, which comprises:

(a) a horizontal base;

(b) a vertical rear support;

(c) a series of ducts extending diagonally from the upper portion of the vertical rear support to the forward portion of the horizontal base;

(d) an inlet port located at one side near the top of each diagonal duct;

(e) an outlet port located at the side opposite the inlet port near the base of each diagonal duct;

(f) a first light-transmissive material adapted to form a con-

vex curvilinear shape extending from near the top of the vertical rear support to the forward portion of the horizontal base, and positioned to receive sunlight;

(g) a second light-transmissive material adapted to be secured to the upper portion of the series of diagonal ducts, forming a first chamber between the first and second light-transmissive materials;

(h) a third light-transmissive material adapted to be secured to the lower portion of the diagonal ducts, forming a series of second chambers between the second and third light-transmissive materials and the diagonal ducts;

(i) a light-reflective material adapted to form a concave curvilinear shape extending from near the top of the vertical rear support to near the forward portion of the horizontal base, beneath the diagonal ducts, forming a third chamber between the third light-transmissive sheet material and the concave light-reflective material;

(j) heat storage means located in proximity to the solar heat collecting apparatus;

(k) one end of the collecting apparatus adapted to route air from the first chamber into the second chambers, and to redirect air from the third chamber to the heat storage means or the point-of-use;

(l) the opposite end of the apparatus adapted to route air from the second chambers to the third chamber, and to redirect air from the heat storage means or the point-of-use to the first chamber; and

(m) control means to force air under pressure selectively between the heat storage means and the point-of-use or between the heat storage means and the solar collecting apparatus, on demand.

4,258,698

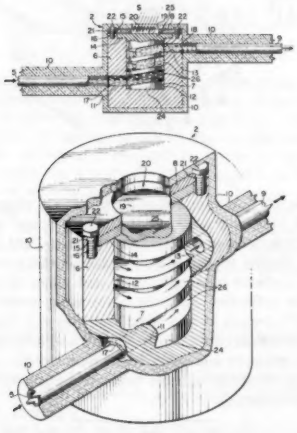
SOLAR HEATING APPARATUS

Franklin D. Sales, 333 Mamaki St., Honolulu, Hi. 96821

Filed Sep. 10, 1979, Ser. No. 74,086

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—440 **6 Claims**



1. A solar heating apparatus comprising a heat conductor, a frame, and a Fresnel lens; the heat conductor is secured to the bottom portion of the frame and the Fresnel lens is secured to the top portion of the frame; the heat conductor is positioned substantially within the focal point of the Fresnel lens when the heat conductor is secured to the frame; the heat conductor includes an inlet conduit, a housing, a core, a pressure plate, and an outlet conduit; the housing includes an inlet opening, a central opening, an outlet opening, an inner flange, an outer flange, and two connector openings; the inlet conduit is in communication with the inlet opening and the outlet conduit is in communication with the outlet opening; the core includes a cylindrical body with a helical conduit revolving around its periphery and a head; the cylindrical body of the core fits within the central opening of the housing so that one end of the helical conduit communicates with the inlet opening and the other end of the helical conduit communicates with the outlet opening; the pressure plate includes a center opening and two connector openings; the pressure plate is secured to the outer flange by two bolts which pass through the connector openings of the pressure plate and the housing in order to secure the core within the housing; the center opening of the pressure plate allows impinging focused solar radiation onto the top of the core; insulation coats the heat conductor except for the center opening of the pressure plate; the frame includes a bottom portion, a side portion, a top portion, and a connector portion; the bottom portion includes four angles which are connected at their ends to form a rectangular structure; the side portion includes four angles which are placed and secured upright to the corners of the bottom portion; the top portion includes four angles which are connected at their ends to form a rectangular structure and are secured to the side portion; the connector portion includes two spaced angles which are secured at their ends to the bottom portion; the angles of the connector portion are spaced so that the heat conductor fit within the legs of the angles and is secured thereto; Fresnel lens is secured to the top portion of the frame by means of fasteners which are punched out of the top portion.

4,258,699

SOLAR COLLECTORS

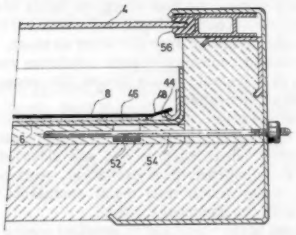
Ruben Masel, Kiron, and George Valdshtein, Holon, both of Israel, assignors to Koor Metals Ltd., Industrial Zone, Israel

Filed Nov. 30, 1978, Ser. No. 965,061

Claims priority, application Israel, Dec. 13, 1977, 53591; Sep. 1, 1978, 55478

Int. Cl.³ F26V *3/02*

U.S. Cl. 126—432 **9 Claims**



1. A solar collector including a housing containing an inlet, an outlet, a backing plate to be disposed during use at an incline with respect to a source of solar radiations, and a film secured at one edge, constituting its top edge during use, to freely overlie said backing plate, said inlet being at one end, constituting the top end during use, of the housing for inletting a heat-exchange liquid between the backing plate and the overlying film such that during use the heat-exchange liquid flows downwardly by gravity in the form of a thin uniform layer between the film and the backing plate; characterized in that said film is a darkened heat-absorbing pliable film having high heat-absorption and low heat-resistivity properties, and that is lies loosely over the backing plate in direct contact therewith with the side edges of the film unsecured for free and unrestrained movement on the backing plate, and further, in that said backing plate is substantially planar and includes a projection extending uniformly along each side edge thereof projecting from the plane of the backing plate in the direction of the overlying darkened heat-absorbing film, the side edges of said film loosely resting on said projections so as to be flexed thereby away from the plane of the backing plate, thereby

permitting the free and unrestrained sidewise movement of said film side edges and at the same time producing a meniscus in the heat-exchange liquid flowing along the side edges between said darkened heat-absorbing film and said backing plate effectively sealing said side edges against leakage of the liquid and entrance of air.

4,258,700

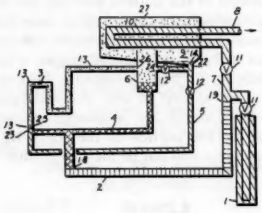
SOLAR OR WASTE HEAT-EXOTHERMIC/ENDOTHERMIC LIQUID-HEAT SINK AND PUMP

Vesper A. Vaseen, 9840 W. 35th Ave., Wheatridge, Colo. 80033

Filed Jun. 4, 1979, Ser. No. 44,966

Int. Cl.[3] **F24J** *3/02;* **F28D** *15/00;* **F04B** *19/24*

U.S. Cl. 126—433 **1 Claim**



1. I claim a method which by use of solar heat or waste heat energy, both pumps and heats the liquid being pumped, consisting of the steps of;

providing a liquid composed of specific chemicals which is exothermic when added to water, and

endothermic when the water is evaporated therefrom,

placing said liquid in a closed reservoir and piping system, which has a means of being heated,

by solar or by waste heat,

thus not only storing the heat energy as latent heat in the liquid mixture of chemical liquid and water, but evaporating from the liquids mixture the water as steam,

which in a closed controlled volume condenser causes and displaces in a separate piping system the steam volume equivalent of inert liquid,

which acting as a piston, moves a column or pipe full of cold water of equivalent volume to an elevated location.

said cold water when being moved and elevated passing through the condenser-heat exchanger, condensing the steam to water which then reacts exothermally when remixed with the chemical solution,

the condensing of the water and its resultant mixing with the chemical liquid,

thus causing a reduced pressure in the closed system,

which reverses the direction of the liquid piston,

thus the vacated piping volume which was previously vacated is then again filled with the liquid being pumped and as pumped heated,

thus repeating the cycle,

thus achieving the objective of intermittantly pumping and heating a mixture of liquid chemicals and water.

4,258,701

SOLAR COLLECTOR PANEL

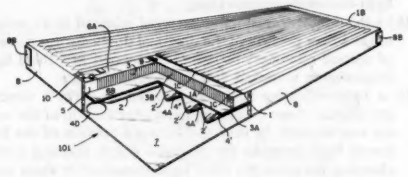
Bruce S. Buckley, Cambridge, Mass., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 1, 1977, Ser. No. 783,764

Int. Cl.[3] **F24J** *3/02*

U.S. Cl. 126—434 **14 Claims**

1. A heat transmission module that comprises, in combination: solar collector means containing liquid for absorbing solar radiation; storage means for storing liquid, the storage means connected to the solar collector means through liquid flow passages to exchange liquid therebetween, the liquid flow between the solar collector means and the storage means forming a natural convection circulation loop; and insulation means for insulating and separating the collector means from the storage means and for carrying structural loads; the storage



means and the insulation means being structurally bonded to each other in load-bearing relationship, at the periphery of the module and at a multiplicity of zones distributed throughout the area of the module within the periphery, so as to provide a unitary load-bearing structure.

4,258,702

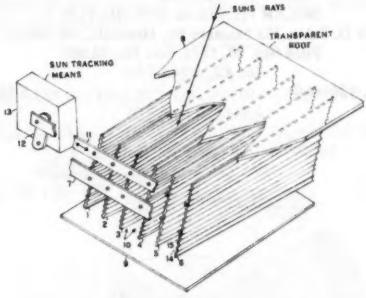
VANES FOR SOLAR HEATING

Henry Harrison, Locust Valley, N.Y., assignor to Halm Instrument Co., Inc., Glen Head, N.Y.

Filed Jul. 28, 1975, Ser. No. 599,379

Int. Cl.[3] **F24J** *3/02*

U.S. Cl. 126—439 **12 Claims**



1. A plurality of thin vanes having inner edges and outer edges said vanes mounted in parallel planes, and spaced apart to permit free passage between the vanes of light and infrared radiation parallel to said vanes, and a plurality of contoured reflecting surfaces on a portion of said vanes near said inner edges, said reflecting surfaces comprising surface elements angled with respect to said parallel planes and closely spaced so that they reflect substantially all light and infrared rays from the spaces between said inner edges which strike said portion of said vane back through the space between said inner edges by a single reflection.

4,258,703

ROOF AND WALL COVERING

Ludwig Reitmaier, Marktl, Fed. Rep. of Germany

Filed Jun. 16, 1978, Ser. No. 916,115

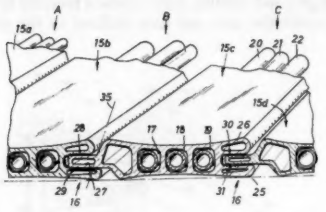
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1977, 7731861[U]; Nov. 4, 1977, 2749490

Int. Cl.[3] **F24J** *3/02*

U.S. Cl. 126—445 **21 Claims**

1. Roof and wall covering, in particular for heat-insulating house walls or roofs, consisting of board-like hollow plastic sections having outwardly and inwardly oriented section walls which are concave and with at least one web connected to the

section walls forming each hollow section into at least two through profile chambers extending in a longitudinal direction and each section having a tongue along one edge and a groove along an opposite edge for tongue and groove connection



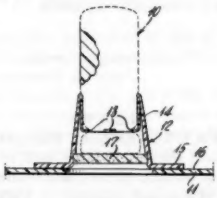
between adjacent sections, characterized in that at least one of the profile chambers is designed as a duct section or is equipped with a duct section and that the duct section is connected with a pump circuit for a heat absorption fluid.

4,258,704

BODY ORIFICE ACCESSORY

Roger C. Hill, Skipton, England, assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Aug. 30, 1978, Ser. No. 938,149
Int. Cl.³ A61B *19/00*
U.S. Cl. 128—1 R **10 Claims**



1. An accessory for providing closure for a body orifice which comprises an absorbent flexible closure plug including a distal and a proximal end, said proximal end being capable of being introduced into said body orifice, and an abutment portion suitable for laying on the outside of the body, said abutment portion including attachment means capable of holding the distal end of said plug to said abutment portion so as to restrict said plug from being introduced too far into said orifice while insuring the occlusion thereof, said attachment means comprising means embracing said distal end of said plug, said abutment portion comprising a flexible adhesive sheet.

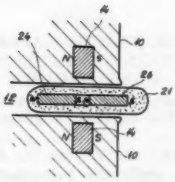
4,258,705

MAGNETIC SYSTEM FOR USE IN SEALING BODY OPENINGS

Erik L. Sorensen, Helsinge; Per Wolff, Birkerod, and Hans-Ole Larsen, Farum, all of Denmark, assignors to Coloplast A/S, Espergaerde, Denmark

Filed Sep. 15, 1978, Ser. No. 942,857
Int. Cl.³ A61B *19/00*
U.S. Cl. 128—1 R **3 Claims**

1. A sealing device for artificial and natural intestinal and artificial urethra ducts comprising (a) a ring-shaped, axially magnetized magnet member with north pole and south pole and adapted to be implanted in the tissue surrounding the duct near its outlet opening and with its axis substantially coaxial with the axis of the duct, and (b) a sealing member moveable between an inactive position outside the duct and a use position inside the duct near its outlet opening, substantially coaxial with the duct and with part of the sealing member within the implanted ring-shaped magnet member, said sealing member comprising a rod-shaped center magnet member and a sealing material surrounding the center magnet member and adapted to be in sealing contact in use position with the inner wall of the duct, wherein the rod-shaped center magnet member comprises at least two longitudinally aligned individual magnets arranged at a distance from each other and separated by a magnetically inert space, the poles of both magnets being oriented in use position in the same north-south direction as the poles of the ring-shaped implanted magnet member, the magnetically inert space between the two magnets of the center magnet member in use position being positioned within the implanted ring-shaped magnet member and substantially perpendicular to the plane of the implanted ring-shaped magnet



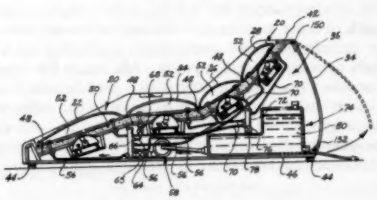
member and substantially central with respect thereto, the poles of the individual magnets of the center magnet member being oriented in the use position relative the orientation of the poles of the implanted ring-shaped magnet member so that magnetic forces exerted by the magnets resisting attempts to push the center magnet member from use position farther into the duct are larger than those resisting attempts to pull it from use position out of the duct, said longitudinally aligned magnets acting together in use position so as to resist any axial displacement, the individual magnets of the rod-shaped magnet member being positioned in use position so as to resist tilting of the axis of the rod-shaped center magnet member relative the axis of the implanted ring-shaped magnet member.

4,258,706

MUSCLE-RELAXING RECLINING CHAIR

Donald C. Shank, 1080 Rock Springs Rd., San Marcos, Calif. 92069

Filed Nov. 17, 1978, Ser. No. 961,552
Int. Cl.³ A61H *1/00*
U.S. Cl. 128—33 **2 Claims**



1. A muscle-relaxing reclining chair comprising:

a body-contoured, body-receiving, compressible cushion means provided with and carried by reclining chair framework means of substantially rigid construction, said body-receiving compressible effective cushion means taking the form of a plurality of compressible, hollow, sealed, inner chamber-defining portions arranged in substantially end-to-end, edge-contiguous relationship to each other; and

means of interconnecting each of said hollow inner chamber portions to a source of fluid under pressure;

a fluid supply source having a high-pressure output side connected to said interconnect means for supplying said

fluid to said sealed inner chamber portions at a controlled pressure;

a pressure control system including means of pressure sensing, pressure selection, and pressure adjustment in response to said selection, whereby the internal pressure of each said chamber may be set and regulated to a desired level; and

means of electrically heating the fluid within each said inner chamber;

a temperature control system including means of sensing the temperature of said fluid, selecting the desired temperatures, and adjustment of said electrical heating means whereby the fluid temperature within each chamber may be set and regulated to a desired level.

4,258,707

THERAPEUTIC TRACTION APPARATUS FOR APPLYING TRACTION TO A PATIENT BY MEANS OF A DRAWING CABLE

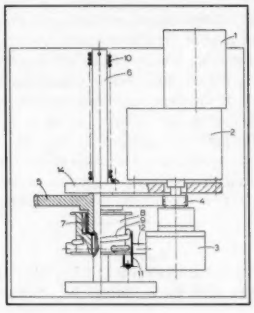
Jan Lettinga, Maasland, Netherlands, assignor to N.V. Verenigde Instrumentenfabrieken Enraf-Nonius, Delft, Netherlands

Filed Oct. 12, 1977, Ser. No. 841,387

Claims priority, application Netherlands, Oct. 15, 1976, 7611461

Int. Cl.³ A61H *1/02*

U.S. Cl. 128—75 **10 Claims**



1. A therapeutic traction applying apparatus for subjecting a patient to applications of traction, said apparatus comprising a drawing cable adapted to be attached to the body of said patient, an electromotor for winding and unwinding said drawing cable in order to generate a desired traction intensity in the cable, electric means for continuously measuring the traction intensity appearing in said drawing cable, means for comparing the measured traction intensity with a predetermined desired traction intensity, and means responsive to the difference established by said comparing means for actuating said electromotor whereby the tension of said drawing cable is varied until said difference has been reduced to at least approximately zero.

4,258,708

ARTICULATED POSITIONING SYSTEM FOR DEVICES ADAPTED TO EXTERNALLY EXERT A HOLDING ACTION ON BONE TISSUES

Giulio Gentile, Via San Martino ai Monti, N.8, 00184 Rome, Italy

Continuation-in-part of Ser. No. 801,305, May 27, 1977, Pat. No. 4,185,624. This application Jul. 17, 1978, Ser. No. 925,159

Claims priority, application Italy, Jul. 22, 1977, 50399 A/77

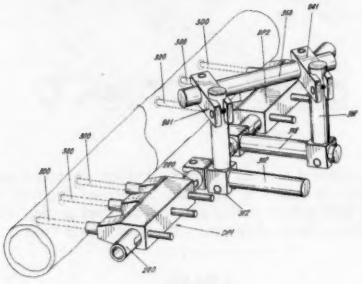
Int. Cl.³ A61F *5/04*; A61B *17/18*

U.S. Cl. 128—92 A **5 Claims**

1. A device for externally exerting a holding action on bone tissues comprising:

(a) a plurality of means for engaging the bone and exerting a holding action thereon;

(b) a plurality of at least three clamping means interconnecting said engaging and exerting means and for permitting rotational movement of said clamping means and said engaging and exerting means about a plurality of mutually perpendicular axes and axes inclined to the axis of the



bone whereby said engaging and exerting means can engage the bone and exert a holding action at an inclined angle to the axis of the bone;

(c) at least one of said clamping means including means for permitting said one clamping means to be translated along one of said axes whereby said one clamping means is movable in a translatable direction.

4,258,709

DEVICE TO COMBAT DRIBBLING

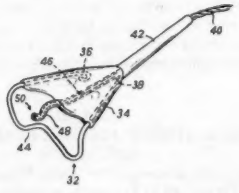
Frederick C. Flack; Richard E. Ellis, both of Exeter; Kenneth Bundy, Dawlish; Francis Miners, and Wilfred G. Selley, both of Exeter, all of England, assignors to University of Exeter, Devon, England

Filed Mar. 26, 1979, Ser. No. 23,600

Claims priority, application United Kingdom, Mar. 29, 1978, 12301/78

Int. Cl.³ A61F *5/00*

U.S. Cl. 128—136 **6 Claims**

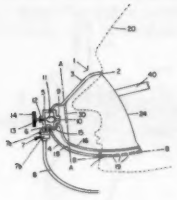


1. A device for teaching a patient to keep his lips closed, comprising a first electrode; a second electrode in the form of a frame around the first electrode; and means for holding the two electrodes in a spaced relationship; said device being constructed and arranged for insertion between a patient's lips with said first electrode in contact with one of the patient's lips and with said second electrode in contact with the other of said patient's lips to complete an electrical circuit when the patient's lips are closed; electrical detector means for detecting the breaking of said electrical circuit when the lips are opened; and an indicator operably connected to and controlled by the detector for providing an indication when said electrical circuit is broken.

4,258,710
MASK-TYPE RESPIRATOR

Fred L. Reber, R.R. #1, Box 115A, Gifford, Ill. 61847

Filed Aug. 16, 1978, Ser. No. 934,195
Int. Cl.[3] A62B 7/04
U.S. Cl. 128—204.18 5 Claims



1. In a mask-type respirator including a head-supported, cup-like mask opened at the rear and shaped to be adapted to engage the face and to enclose the nose and mouth of a wearer and having air inlet means whereby air under pressure is introduced into the interior of said mask at a point above the mouth of the wearer, the features comprising:

(a) an opening in the front of said mask,

(b) compressed air valve means located in said mask front opening, said valve means having an outlet into the interior of said mask and an exterior inlet for connection to a supply of compressed air, said valve means being adapted to be manually adjusted by the wearer of said mask to thereby vary the flow of air into said mask,

(c) compressed air supply means connected to said valve means inlet,

(d) a coupler element positioned in said air supply means, adjacent said mask valve means whereby said mask can be uncoupled from said air supply,

(e) baffle means located within said mask, intermediate said valve means outlet to said mask interior and the nose of the wearer of said mask, whereby air entering said mask through said valve means is directed downwardly within said mask below the nose of the wearer,

(f) outlet means from said mask for exhaled breath of the wearer, said outlet means comprising the sides of said mask, in the regions of the cheeks of the wearer below the mouth of the wearer, being shaped to be in spaced relationship with respect to the cheeks of the wearer, and provides an essentially tight fit about the bridge of the wearer's nose and chin and along the cheeks of the wearer from the bridge of the nose to a point below the wearers mouth where said outlet means is provided whereby said mask sides and the cheeks of the wearer define therebetween narrow openings to the atmosphere from the interior of said mask, whereby a main flow of air autogenously is established through said mask that follows a path downwardly from said air inlet, then downwardly around said baffle means, then downwardly past the mouth of the wearer, and downwardly then out of said mask through said mask outlet means.

4,258,711
INFUSION APPARATUS AND METHOD

Elton M. Tucker, Medfield, and Frank R. Prosl, Duxbury, both of Mass., assignors to Metal Bellows Corporation, Sharon, Mass.

Division of Ser. No. 9,756, Feb. 5, 1979, Pat. No. 4,193,397, which is a continuation-in-part of Ser. No. 856,558, Dec. 1, 1977, abandoned. This application Sep. 17, 1979, Ser. No. 76,169
Int. Cl.[3] A61M 31/00
U.S. Cl. 128—207.19 12 Claims

1. Non-electrical implantable infusion apparatus comprising

A. a housing;

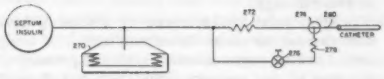
B. a collapsible infusate reservoir having an outlet and positioned inside the housing;

C. means for collapsing said reservoir to expel infusate from its said outlet;

D. mixing means inside the housing and having a selected volume;

E. a first flow path having a selected flow restriction characteristic connected between said reservoir and said mixing means;

F. a second flow path having a selected flow restriction characteristic connected between said reservoir and said mixing means;



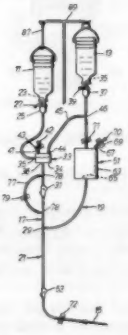
G. a normally closed valve connected in the second flow path so that infusate flows from the reservoir to the mixing means along the second path only when said valve is opened, the infusates flowing along said first and second paths when said valve is opened supplementing one another in the mixing means to produce an integrated dosage, and

H. a fluid outlet from the mixing means for conducting said integrated dosage out of the housing to an infusion site.

4,258,712
EQUIPMENT SETS HAVING A PILOT LIQUID CONTROLLED PRIMARY TUBE VALVE FOR THE SEQUENTIAL ADMINISTRATION OF MEDICAL LIQUIDS AT DUAL FLOW RATES

Jack L. Harms, Mundelein; Joseph N. Genese, Waukegan, and Andrew J. Muetterties, Lake, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 28, 1979, Ser. No. 16,268
Int. Cl.[3] A61M 05/14
U.S. Cl. 128—214 G 30 Claims



1. In a set for the sequential administration of medical liquids to a patient, said set including:

a primary tube for the flow of primary medical liquid therethrough and including a primary valve for controlling the flow of liquid through said primary tube,

a secondary tube for the flow of a secondary medical liquid therethrough;

said primary valve being effective only to prevent the flow of primary liquid administration therethrough during administration of secondary liquid, the flow of secondary liquid through said secondary tube being independent of the operation of said primary valve,

a common tube having its distal end in fluid communication with the proximal ends of said primary and secondary tube and its proximal end open for the flow of liquid therefrom to form a primary liquid flow path comprising

said primary tube and said common tube and a secondary flow path comprising said secondary tube and said common tube, the improvement which comprises:

a secondary flow control means in said secondary liquid flow path for adjusting the flow rate of said secondary liquid therethrough,

a primary flow control means on said primary tube for adjusting the flow rate of said primary liquid through said primary flow path to a rate independent of the flow rate of said secondary liquid through said secondary liquid flow path, and an air barrier in said secondary liquid flow path substantially impervious to air for preventing the flow of air therethrough,

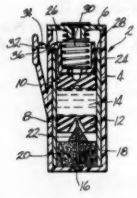
said primary valve characterized by a housing having an inlet thereto, an outlet therefrom, said inlet being connected in fluid communication with said primary tube for entrance of said primary liquid into and through said housing and out of said outlet, and a port not in fluid communication with said inlet and outlet to said primary valve, said port connected in fluid communication to the proximal end of a secondary liquid pilot tube which is connected in fluid communication at its distal end to said secondary tube for the flow of secondary liquid into said port, whereby said secondary liquid flowing into said port is effective to close said outlet to the flow of primary liquid from said primary valve.

4,258,713

AUTOMATIC DISPOSABLE HYPODERMIC SYRINGE

Stephen C. Wardlaw, 128 Sunset Hill Dr., Branford, Conn. 06405

Filed Jul. 23, 1979, Ser. No. 59,903
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—218 F **8 Claims**



1. An automatic hypodermic syringe comprising:

(a) a housing;

(b) means containing an injectable medication within said housing;

(c) a hypodermic needle disposed within said housing;

(d) means for driving said hypodermic needle from a retracted position within said housing to an injecting position wherein a portion of said needle protrudes from said housing; and

(e) foam means in said housing for engaging said needle to hold said needle properly in said retracted position, said foam means being readily crushable so as to allow said needle to be driven to said injecting position.

4,258,714

EAR SYRINGE

Norbert Leopoldi, 4180 Marine Dr., Chicago, Ill. 60613, and William P. Heinrich, 2709 W. Sterling Dr., McHenry, Ill. 60050

Continuation of Ser. No. 971,508, Dec. 20, 1978, abandoned. This application Dec. 19, 1979, Ser. No. 105,280
Int. Cl.³ A61M *1/00*
U.S. Cl. 128—232 **3 Claims**

1. An ear syringe including a compressible bulb and a nozzle, a restriction between the interior of the bulb and the nozzle, said nozzle having means comprising an expansion chamber which reduces the velocity of fluid discharged from the bulb through the nozzle, said expansion chamber being open adjacent to the discharge end of the nozzle, an opening in said bulb, said nozzle mounted in said opening, said restriction including a valve at the inner end of said nozzle mounted at least partially within said opening, said valve including an inner flap member

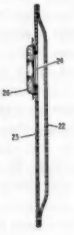
movable between an open fill position and a closed discharge position, and an opening of predetermined size through the flap member effective in the closed position to restrict fluid flow to said expansion chamber and to reduce the velocity of fluid discharged through the open end of the nozzle.

4,258,715

RADIATION CROSSLINKED ACRYLAMIDE POLYMER COMPOSITIONS AND SHAPED ARTICLES THEREFROM

Paul H. Goble, Painesville, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Dec. 8, 1978, Ser. No. 967,606
Int. Cl.³ A61F *5/44*
U.S. Cl. 128—283 **8 Claims**



1. A shaped polymeric product suitable for application to human skin comprising a water-dispersible acrylamide polymer solvated and plasticized with a water-miscible polyol, or mixture of polyols, containing water wherein the quantity of polyol(s) containing water is between about 125–200 parts per 100 parts of said acrylamide polymer providing a polymeric product that is soft, flexible and elastomeric, said polymeric product being irradiated with ionizing radiation to effect substantial crosslinking of the acrylamide polymer thereby rendering it substantially insoluble in water.

4,258,716

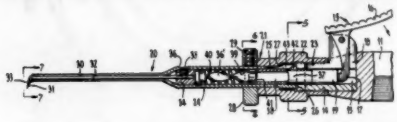
MICROSURGICAL INSTRUMENTS

Geoffrey Sutherland, Melbourne, Australia, assignor to The University of Melbourne, Parkville, Australia

Filed Jan. 30, 1979, Ser. No. 7,778
Claims priority, application Australia, Feb. 6, 1978, PD3258
Int. Cl.³ A61B *17/32, 17/28*
U.S. Cl. 128—318 **9 Claims**

1. A finger operated microsurgical instrument comprising a handle and an elongated instrument body rotatably secured

within the end of said handle and having a surgical instrument on its other end, plunger means having a substantially flat face reciprocable within the portion of the instrument body which is secured within said handle, an operating bell crank lever pivoted to said handle and having a first arm positioned to be engageable by a surgeon's finger while the handle is held in the surgeon's hand, and a second arm engaging said plunger, an instrument actuating means having a substantially flat face within said instrument body and in frictional face-to-face en-



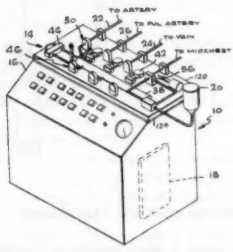
gagement with said plunger, so that pivotal movement of said first arm by said surgeon will cause reciprocation of saind plunger means against said actuation means and actuation of said instrument, means preventing said actuating means from rotating relative to said instrument body, said instrument body being freely rotatable relative to said handle when said bell crank lever is released, said plunger means and instrument actuating means frictionally securing said instrument body from rotation when said bell crank lever is pivoted in use.

4,258,717

VASCULAR INTERFACE

Jose Bisera, Camarillo; James H. Carrington, Los Angeles, and Max H. Weil, Beverly Hills, all of Calif., assignors to Institute of Critical Care Medicine, Los Angeles, Calif.

Filed Sep. 6, 1977, Ser. No. 830,847
Int. Cl.[3] A61B *5/00*
U.S. Cl. 128—637 **1 Claim**



1. A vascular interface apparatus, for connection to a patient comprising:

an arterial station including an arterial station valve with first, second, and third ports and an arterial catheter coupled to said first port for connection to an artery of the patient;

a venous station including a venous catheter for connection to a vein of the patient;

a sample station which includes a sample valve having first, second, and third ports and a valve member movable to connect said first port to said second or third ports, and a syringe receiver means at said third port for receiving a syringe means that can hold a blood sample;

a first conduit coupling said second port of said arterial station valve to said first port of said sample valve;

a second conduit coupling said second port of said sample valve to said venous station;

means for operating said sample valve to interconnect said first and second sample valve ports to cause blood flow from an artery to a vein past said sample station, and to interconnect said first and third sample valve ports to enable the filling of a syringe means with a blood sample;

a flushing source which includes a container of saline solution coupled to said third port of said arterial

flushing means for operating said arterial station valve to connect said third port to said first port to flush said arterial catheter by passing saline solution through the first and second conduits and through the venous catheter to the patient;

an arterial transducer coupled to said arterial station to measure the arterial blood pressure;

a venous transducer coupled to said venous station to measure the venous blood pressure; and

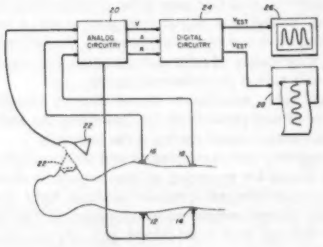
means operable to apply a controlled pressure to said arterial and venous stations and to the transducers coupled thereto while blocking the application of blood pressure to said transducers, whereby to enable simultaneous calibration of the transducers to the same pressure while maintaining the sterility of the system.

4,258,718

MEASURING RESPIRATORY AIR VOLUME

Michael D. Goldman, 2700 Southington Rd., Shaker Heights, Ohio 44120

Filed Apr. 16, 1979, Ser. No. 30,314
Int. Cl.[3] A61B *5/08*
U.S. Cl. 128—653 **15 Claims**



1. Apparatus for measuring respiratory air volume, comprising:

means for determining an estimate of respiratory air volume, comprising

an abdomen sensor for measuring an abdomen dimension,

a rib-cage sensor for measuring a rib-cage dimension,

means for determining the sum of said abdomen dimension multiplied by an abdomen coefficient plus said rib-cage dimension multiplied by a rib-cage coefficient, and

means for providing an estimated respiratory air volume output, and

means for calibrating while the patient breathes normally, comprising

means for measuring actual respiratory air volume,

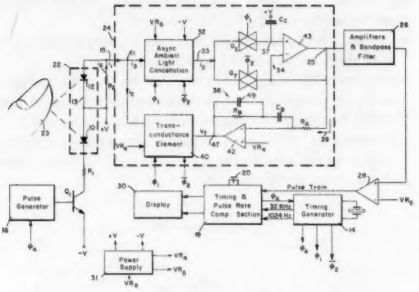
means for simultaneously sampling said abdomen dimension, said rib-cage dimension, and said actual air volume at a plurality of times during each breath of a calibration interval, said interval extending for one or more normal breaths, said sampling occurring frequently enough to generate during a single said breath a multiplicity of sets of data representing said dimensions and said volume, with the relative contributions of rib-cage and abdominal displacements varying from set to set despite the absence of respiratory maneuver other than normal breathing, and

means for processing said samples to select values for said abdomen and rib-cage coefficients that correlate said estimated air volume and said actual air volume.

4,258,719
HEART RATE MEASUREMENT SYSTEM

Lanny L. Lewyn, Laguna Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 4, 1978, Ser. No. 965,816
Int. Cl.[3] A61B 5/02
U.S. Cl. 128—690 25 Claims



1. A pulse rate measuring system for receiving during sample pulse intervals, a pulsed photocurrent signal including an ambient light photocurrent signal and a pulsed photocurrent carrier signal which is amplitude modulated by a heart blood pressure signal, and for providing said heart blood pressure signal to an output terminal, said rate measuring system comprising

a sensor including a pulsed light source and a photodiode having an anode and a cathode with the cathode coupled to a first source of reference potential, the anode providing said pulsed photocurrent signal,

ambient light cancellation means directly coupled to the anode of said photodiode for cancelling the ambient light photocurrent signal during pulse intervals,

first integrator means coupled to said ambient light cancellation means for receiving at least a portion of the pulsed photocurrent signal from said ambient light cancellation means during sample pulse intervals and for integrating and holding said heart blood pressure signal, and first integrator means providing heart blood pressure and error voltage signals to an output terminal, and

feedback means coupled between the output terminal of said first integrator means and the anode of said photodiode and including a second integrator means and a switched transconductance element, said second integrator means including an operational amplifier having an output terminal coupled to said switched transconductance element and having first and second input terminals with said first input terminal coupled to respond to said error voltage signals to control said switched transconductance element to provide a cancelling current during sample pulse intervals, and a second source of reference potential coupled to said second input terminal of said operational amplifier for maintaining the potential substantially constant at said first input terminal of said operational amplifier.

4,258,720
STRAIN GAUGE PLETHYSMOGRAPH

Edward P. Flowers, Mountain View, Calif., assignor to Medasonics, Mountain View, Calif.

Filed Feb. 9, 1979, Ser. No. 10,952
Int. Cl.[3] A61B 5/02
U.S. Cl. 128—694 11 Claims

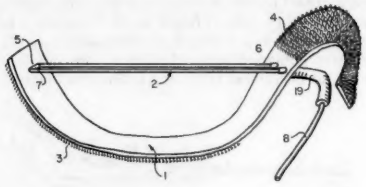
1. A transducer for a strain gauge plethysmograph comprising:

an elastic tubular member;

electrically conductive means;

means for fastening said elastic tubular member about an appendage; and

means coupled in parallel with said elastic tubular member for mechanically restricting the length to which said

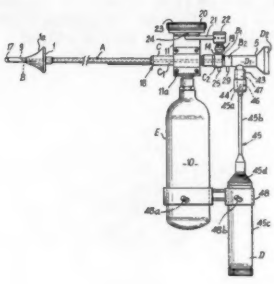


elastic tubular member can be stretched when it is fastened about said appendage.

4,258,721
SELF-CONTAINED PORTABLE HYSTEROSCOPE

Bernard Parent, 5, rue Paul Valéry, 75016 - Paris, France, and Herbert Guedj, 362, rue Lecourbe, 75015 - Paris, France

Filed Jan. 16, 1979, Ser. No. 3,972
Claims priority, application France, Jan. 26, 1978, 78 02177
Int. Cl.[3] A61B 1/30, 10/00
U.S. Cl. 128—747 10 Claims



1. A self-contained portable hysteroscope comprising, in combination:

a pair of elongated hollow relatively axially slidable elements to be inserted into the uterine cavity comprising a cannula defining an outer envelope, and an endoscope tube of smaller diameter than the cannula and axially slidably received therein;

handle means attached to at least one of said pair of elements to be grasped by one hand for manipulating said hysteroscope;

means attached to at least one of said pair of elements to support a self-contained source of gas and a self-contained source of light;

said endoscope tube including optical viewing means for conducting light from said light source to the distal end of the endoscope tube and to return an image of the area illuminated to the proximal end of the tube;

conduit means for conducting gas from said source to the distal end of said endoscope tube for detending the walls of the uterine cavity;

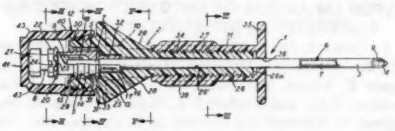
said outer envelope being provided with means at the distal end for establishing and automatically maintaining a fluid-tight seal with the entrance to the cervix of the uterus when manipulated by said handle by one hand.

4,258,722

DISPOSABLE BIOPSY NEEDLE, PARTICULARLY FOR BONE MARROW SAMPLINGS

Robert W. Sessions, Hinsdale; Jerome Jeslis, Chicago, and Richard A. Rodzen, Bolingbrook, all of Ill., assignors to Ferris Manufacturing Corp., Hinsdale, Ill.

Filed Dec. 15, 1978, Ser. No. 969,709
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—753 **17 Claims**



1. In a disposable biopsy needle, particularly for bone marrow biopsy samples, with an elongated plastic, hollow, body member, a hollow needle structure having its proximal end extending through a first end of the hollow body member and its distal end projecting from the hollow body member and terminating in a pointed free end, a stylet structure, in the general form of a rod member, disposed in the hollow needle structure with a distal end operatively closing the adjacent distal end of the needle structure and having a proximal end extending from the corresponding proximal end of the needle structure and lockable thereto to block relative rotation therebetween, an improvement comprising:

a region in the hollow body member having a selected cross section with at least two spaced apart parallel sides;

at least one radially extending rib surrounding a portion of the proximal end of the hollow needle structure and located within said region of said hollow body member, said rib has at least two spaced apart parallel sides;

a layer of adhesive located in said region in the hollow body member and in contact with said radially extending rib to rigidly attach the proximal end of the hollow needle structure to the hollow body member;

a cap threadably receivable onto a set of threads on a second end of the hollow body member, adjacent the proximal end of the stylet structure and rotatable into contact with the proximal end of the stylet structure to lock the stylet structure into a fixed axial position with respect to the elongated hollow body member;

and a stop member threadably mounted on the first end of the hollow body member and axially adjustable therealong by rotation to vary the distance between a distal end thereof and the pointed end of said needle structure, said stop member having an enlargement at said distal end adapted to engage the skin surface of the object from which the sample is to be taken for limiting penetration of the needle structure therein.

4,258,723

BIOLOGICAL/PHARMACEUTICAL FLUID COLLECTION AND MIXING SYSTEM AND METHOD

John P. McCue, San Diego, and Mogens L. Bramson, San Francisco, both of Calif., assignors to SBR Lab, Inc., El Paso, Tex.

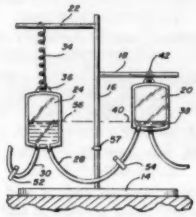
Filed Aug. 1, 1978, Ser. No. 928,411
Int. Cl.³ A61M *5/14*
U.S. Cl. 128—767 **63 Claims**

1. Apparatus for entering a first biological/pharmaceutical liquid of a first container into a mixing container through a tube at a rate controlled by the rate of entry into the mixing container of a second biological/pharmaceutical liquid, comprising:

means for supporting the first container with the first liquid therein at a first liquid level;

means for supporting the mixing container with the mixture of the first and second liquids therein at a second liquid level, the flow rate of said first liquid being dependent upon the difference between said first and second levels; and

means associated with at least one of the supporting means and the container supported thereby for controlling the difference between said first and second levels, said con-



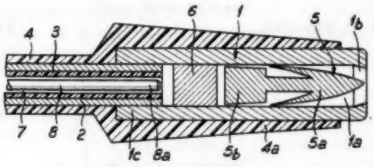
trolling means including means for automatically causing relative motion between the container of said one supporting means and the container of the other supporting means in response to and in accordance with the weight of the liquid in the mixing container, said weight changing at a rate dependent upon the flow rate of the second liquid.

4,258,724

ENDOCAVITARY CARDIAC STIMULATION PROBE

Roger Balat, Paris; Joseph A. Illes, Bourg-la-Reine; Jean-Francois V. Jacquemart, Paris, and Christian Sarda, Serquigny, all of France, assignors to Synthelabo, Paris, France

Filed Apr. 13, 1979, Ser. No. 29,771
Claims priority, application France, Apr. 19, 1978, 78 11512
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—785 **13 Claims**



1. An endocavitary cardiac stimulation probe comprising an electrode, means carried by said probe and operatively associated with said electrode for anchoring said electrode to the endocavitary wall, means carried by said probe for neutralizing said anchoring means until said electrode is brought into contact with the endocavitary zone to be stimulated and it is desired to anchor said electrode to the endocavitary wall, and an externally insulated flexible conductor electrically connected to said electrode for connecting said electrode to a cardiac stimulator, said means for anchoring said electrode to the endocavitary wall being formed, at least in its active portion, of a solid biocompatible material which is resorbable over a period which in practice is between three weeks and three months.

4,258,725

PACING LEAD WITH STYLET AND TAPERED TERMINAL PIN

Edward G. O'Neill, St. Paul, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

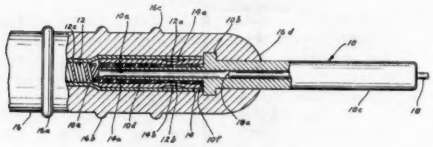
Filed Sep. 21, 1979, Ser. No. 77,868
Int. Cl.³ A61N *1/00*
U.S. Cl. 128—419 P **5 Claims**

1. A cardiac pacing lead having a stylet comprising:

a coiled conductor having a proximal end;

sheath means of material substantially inert to body fluids covering said coiled conductor;

a terminal pin having a proximal end, having a longitudinal aperture, and having a distal portion with a distal tip of a smaller outside diameter than the remainder of said distal portion within said proximal end of said coiled conductor, whereby the insertion of said stylet into said longitudinal



aperture at said proximal end of said terminal pin and therefrom via said distal portion of said terminal pin into said coiled conductor is facilitated by said smaller outside diameter; and

outer sleeve means frictionally attached to said proximal end of said conductor coil, whereby said proximal end of said conductor coil is caused to frictionally engage said distal portion of said terminal pin.

4,258,726

ADJUSTABLE GUIDE VANES FOR AN AXIAL FLOW ROTARY SEPARATOR

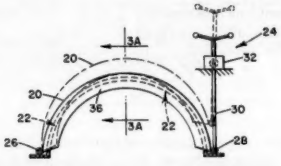
Fritz Glaser, Zweibrücken; Christoph Görtz, Battweiler; Kurt K. Bühler; Josef W. Klimmer, both of Zweibrücken, all of Fed. Rep. of Germany; René Laberheim, Volmünster, France; Klaus H. Pauli, Bad Homburg, and Werner Velten, Contwig, both of Fed. Rep. of Germany, assignors to Deere & Company, Moline, Ill.

Filed Jul. 5, 1979, Ser. No. 55,093

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1978, 2830104

Int. Cl.³ A01F *12/28*

U.S. Cl. 130—27 L **11 Claims**



1. In an axial flow rotary separator for a combine, including a housing and a rotor rotatably mounted within and concentric with the housing and carrying on its surface a plurality of material-treating and controlling elements, the housing being generally cylindrical in form and having a generally cylindrical wall with an upstream inlet end and a downstream outlet end, rotor and housing cooperating as the rotor rotates to process crop material introduced to the housing at the upstream end while transferring it to the downstream end, an improved means for controlling the axial progress of the crop material through the housing comprising:

a plurality of spaced apart elongated guide bars, each bar being raised generally radially inwards from the housing wall and being disposed generally helically so as to engage crop material being propelled circumferentially by the rotor within the annular space, the helical disposition being such that relative movement between the material and the guide bar deflects the material axially towards the outlet end of the housing, each guide bar including with respect to crop material circumferential movement a leading portion and a trailing portion, the leading portion being substantially fixed in positional relationship to the housing and carried by the housing and the trailing portion being operatively associated with and essentially continuing the leading portion and selectively adjustable with respect to the leading portion so as to vary the effectiveness of the guide bar in deflecting crop material axially.

4,258,727

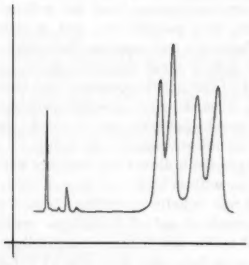
USE FOR AUGMENTING OR ENHANCING THE FLAVOR OR AROMA OF SMOKING TOBACCO OF 6-HYDROXY-2,6-DIMETHYL-HEPTANAL

Mark A. Sprecker, Sea Bright; Robert W. Trenkle, Bricktown; Braja D. Mookherjee, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y., and Frederick L. Schmitt, Holmdel, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 961,685, Nov. 17, 1978, abandoned. This application Jun. 27, 1979, Ser. No. 52,357

Int. Cl.³ A24B *3/12*

U.S. Cl. 131—9 **4 Claims**



GC PROFILE , EXAMPLE I

1. A process for augmenting or enhancing the aroma or taste of a smoking tobacco comprising the step of intimately admixing with smoking tobacco an aroma or taste augmenting or enhancing quantity of substantially pure, synthetically produced 6-hydroxy-2,6-dimethylheptanal.

4,258,728

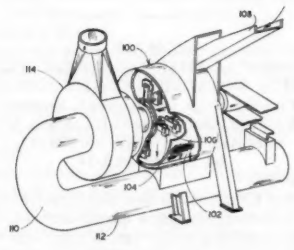
PROCESS FOR IMPROVING THE FILL POWER OF RECONSTITUTED TOBACCO

Philip H. Cogbill, II, Pineville, N.C., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Jun. 11, 1979, Ser. No. 47,453

Int. Cl.³ A24B *3/18*

U.S. Cl. 131—137 **7 Claims**



1. A process for improving the fill power of reconstituted tobacco comprising the steps of:

wrinkling reconstituted tobacco; and, shattering the wrinkled tobacco with a hammer mill wherein said hammer milling is performed at from 650 to 1400 revolutions per

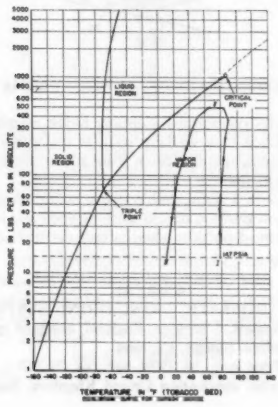
minute with a discharge screening through from 5/16 to ¾ inch screen.

4,258,729

NOVEL TOBACCO PRODUCT AND IMPROVED PROCESS FOR THE EXPANSION OF TOBACCO

Roger Z. de la Burde, Powhatan; Patrick E. Aument, Hopewell, and Francis V. Utsch, Chester, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Mar. 29, 1978, Ser. No. 891,468
Int. Cl.³ A24B *3/18*
U.S. Cl. 131—140 P **5 Claims**



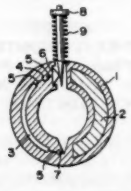
1. A process for expanding tobacco to achieve at least about 50 percent increase in cylinder volume, comprising the steps of (1) impregnating tobacco with gaseous carbon dioxide under a pressure of at least about 250 psig and at sufficient temperature that substantially all of the carbon dioxide is maintained in gaseous form to incorporate in the tobacco at least 1 part of carbon dioxide per 100 parts of tobacco, (2) decreasing the pressure on the carbon dioxide-impregnated tobacco and (3) heating the impregnated tobacco under conditions effective to liberate the carbon dioxide therein so as to cause expansion of the tobacco.

4,258,730

ELECTROSTATIC AND MAGNETIC TOBACCO SMOKE FILTERING ARRANGEMENT

Kenkichi Tsukamoto, Tokyo, Japan, assignor to Seiko Tsukamoto, Tokyo, Japan

Division of Ser. No. 661,355, Feb. 25, 1976, abandoned. This application Aug. 7, 1978, Ser. No. 931,404
Claims priority, application Japan, Feb. 26, 1975, 50-24215
Int. Cl.³ A24D *3/04, 3/06*
U.S. Cl. 131—170 R **7 Claims**



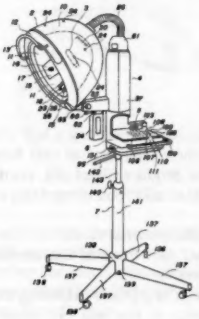
1. A ring-type smoker's set for removing carbon monoxide and nicotine from smoke of tobacco which comprises a combination of a member capable of applying a magnetic field and a member capable of applying an electrostatic field.

4,258,731

HAIR WAVING APPLIANCE CONTROLLED BY A MICROCOMPUTER

Susumu Tsujimoto, Fujiidera; Hayao Yamazaki, Nara; Masayoshi Ozaki, Kawachinagano; Takehiro Kobayashi, Sakai; Toru Fujino, Neyagawa; Mitsuo Yasuda, Tenri; Katsuji Minami, Osaka, and Zirou Itogawa, Takaishi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 13, 1979, Ser. No. 29,693
Claims priority, application Japan, Apr. 14, 1978, 53/44625
Int. Cl.³ A45D *20/00*
U.S. Cl. 132—9 **10 Claims**



1. A heating type hair waving appliance for use on a patron's hairline area comprising:

a head supporting assembly;

a plurality of heating means distributed throughout the interior of said head supporting assembly for heating different hairline regions of the patron's head; and

microprocessor controller means for independently controlling the operation of each of said plurality of the heating means.

4,258,732

SPIRALLY-SHAPED HAIR ROLLER

Rodolfo Mariani, Corso Saffi 27, Faenza, and Francesco Pugliese, Via Canova 35, Milan, both of Italy

Filed Mar. 15, 1979, Ser. No. 20,701
Claims priority, application Italy, Mar. 23, 1978, 21240/78[U]
Int. Cl.³ A45D *2/26*
U.S. Cl. 132—41 R **7 Claims**

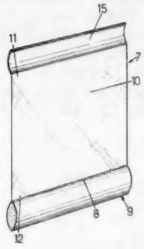
1. A hair roller for the curling and the setting of hair comprising a cylindrical central body having a spirally-shaped element on said body adapted to receive a lock of hair being wound thereon, beginning from the roots and ending at the tips of said hair, and a cylindrical sheath having a plurality of openings and a longitudinal slot extending through the length of said sheath mounted on said central body and operative to move axially parallel to and rotatably about the elongated axes of said cylindrical central body.

4,258,733

METHOD FOR PERMANENT WAVING AND MEANS FOR PRACTICING THIS METHOD

Jean-Claude Fulgoni, 36, Avenue de la Gare, 91470 Limours, France

Filed Jul. 24, 1979, Ser. No. 60,183
Claims priority, application France, Jul. 25, 1978, 78 22017
Int. Cl.[3] A45D *6/00, 6/18*
U.S. Cl. 132—43 A 17 Claims



1. A protective device for perming a hair with a permanent product only adjacent to the root of said hair and shielding from the permanent product effect the portion of the hair which is not adjacent to said root, comprising the combination of:

a watertight, flexible material sheet,

a curved, rigidified part fixed to and extending along one edge of said sheet,

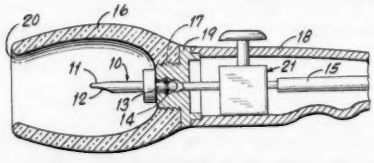
and arresting means fixed to and extending along the edge of the sheet opposite to the said one edge, said arresting means being adapted to prevent permanent product from running along the hair under the sheet due to capillary effect.

4,258,734

PERSONAL CARE APPLIANCE

Lloyd G. Hehlo, 161 Turnpike Rd., East Brunswick, N.J. 08816

Filed Jun. 7, 1979, Ser. No. 46,483
Int. Cl.[3] A45D *29/18*
U.S. Cl. 132—74.5 4 Claims



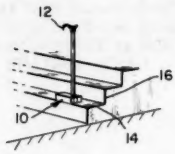
1. A personal care appliance comprising a housing including a port through which the user's finger or toe may be inserted, said housing loosely surrounding said finger or toe; a nozzle means positioned within said housing for directing a liquid jet under the nail of the finger or toe inserted into said housing; means for supplying a stream of liquid to said nozzle and for discharging the liquid as a jet from said nozzle; and a handle member attached to said housing for holding said appliance and positioning said nozzle.

4,258,735

STEP ASSISTING DEVICE

Charles P. Meade, 2550 Pacific Coast Hwy., #197, Torrance, Calif. 90505

Filed Jun. 23, 1980, Ser. No. 162,167
Int. Cl.[3] A45B *1/00*
U.S. Cl. 135—65 7 Claims



1. A step assisting device for use with a walking stick comprising:

a substantially rectangular stepping block member removably attached to a walking stick at the lower extremity thereof and adapted to pivot from a horizontal to a vertical position, and

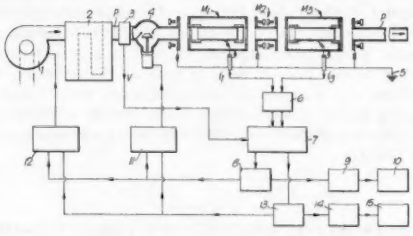
said member in a horizontal position being lower than the bottommost position of said walking stick and higher than the lowermost portion when in said vertical position.

4,258,736

ELECTROSTATIC MONITORING SYSTEM

Nicholas J. Denbow, Uxbridge, England, assignor to Bestobell Mobrey Limited, Slough, England

Filed Aug. 30, 1979, Ser. No. 71,263
Claims priority, application United Kingdom, Sep. 6, 1978, 35816/78
Int. Cl.[3] H05F *1/00*
U.S. Cl. 137—2 20 Claims



1. A system for monitoring an electrostatic charge-carrying low conductivity liquid flowing along a pipeline, said system comprising two separately insulated conductive wall sections of said pipeline, one downstream of the other and means connected to each of said sections for providing a signal representing the relaxation current released, in use, from the liquid to each of said wall sections.

4,258,737

LIQUID LEVEL CONTROLLER

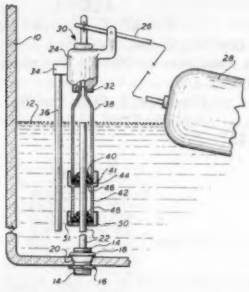
Francis J. Wheeler, 29 Somerset Ave., Bernardsville, N.J. 07924

Filed Feb. 28, 1979, Ser. No. 16,182
Int. Cl.[3] F16K *55/18, 33/00*
U.S. Cl. 137—15 8 Claims

7. A method for replacing a worn ballcock valve mounted on a standpole within a tank with another ballcock valve having depending therefrom a conduit having an inside diameter exceeding the outside diameter of said standpipe, said conduit having a pliable seal, comprising the steps of:

severing said standpipe at a location near said worn ballcock;

vertically and adjustably positioning said another valve over said severed standpipe, said conduit being positioned and sized to telescope over said standpipe and wherein said



pliable seal is operable to seal and attach said conduit to said standpipe at various positions thereon; and

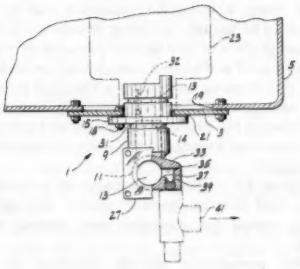
sealing said conduit with said pliable seal to said standpipe to support above it said valve and said conduit.

4,258,738

CRASHWORTHY FUEL SYSTEM

David T. Redman, and George J. Paulis, both of Trumbull, Conn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 9, 1979, Ser. No. 28,040
Int. Cl.³ F16K *13/04*
U.S. Cl. 137—68 **6 Claims**



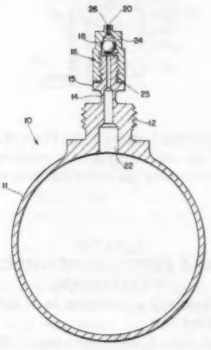
1. In a crashworthy fuel system for aircraft, a fuel tank, a valve therefor comprising a generally L-shaped body, a bore extending the entire length of the L-shaped body forming a main flow passage through the valve, one body portion being a first leg having a fuel inlet, the other body portion being a second leg extending generally at right angles to the first leg and having a fuel outlet, means adapted to secure the valve to the bottom of the fuel tank with the first leg generally vertical, with the inlet extending into the interior of the tank for flow of fuel into the main valve passage, and with the second leg generally horizontal and below the tank on the outside thereof, means including the length of the first leg, an upwardly inclined fuel line, and its connectors making the second leg the lowest point in the fuel system and hence a sump for water accumulation, a boss projecting laterally from said second (sump) leg, means in said boss for draining water from said second (sump) leg, a circumferential area of weakness around the first leg between the fuel tank and the second leg, a normally open valve closure mechanism in the main flow passage between the inlet end of the main flow passage and the area of weakness, and means closing said mechanism in the event of rupture of the L-shaped valve at said area of weakness to seal the main flow passage.

4,258,739

HERMETICALLY SEALED HIGH PRESSURE GAS CONTAINER

John E. Blankenship, Fredericksburg, and Roy W. Hoback, Dahlgren, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 23, 1978, Ser. No. 954,020
Int. Cl.³ F16K *13/04*
U.S. Cl. 137—71 **7 Claims**



1. A hermetically sealed high pressure gas container having extended shelf life comprising:

a strong chamber for combining gas under high pressure having a boss integrally formed thereon, said boss having a gas passage therethrough;

a valve body secured to the end of said boss and having a gas passage therethrough;

valve means disposed within said valve body for permitting gas flow through said valve body into said gas chamber and for precluding gas flow from said gas chamber through said valve body;

first means for hermetically sealing said valve body to said boss;

second means for hermetically sealing the inlet end of the gas passage in said valve body; and

a region of reduced cross-section formed in said boss between said gas chamber and said valve body whereby a lateral blow delivered to said valve body will fracture said boss and permit the gas confined in said chamber to escape.

4,258,740

FLUID FLOW CONTROL DEVICE

Niilo H. Kaartinen, and Pentti J. Juhala, both of Kuusisto, Finland, assignors to Packard Instrument Company, Inc., Downers Grove, Ill.

Division of Ser. No. 797,305, May 16, 1977. This application Nov. 30, 1978, Ser. No. 965,180
Int. Cl.³ F16K *9/00, 13/00*
U.S. Cl. 137—74 **2 Claims**

1. A fluid flow control device comprising the combination of

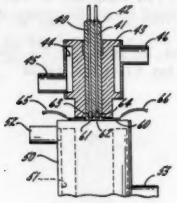
a plurality of thermally conductive conduit sections each having substantially flat interior heat exchange surfaces which are located to contact fluid traversing the respective conduit sections,

a common heat sink coupled to said heat exchange surfaces for all of said conduit sections and maintained at a temperature substantially below the freezing point of a liquid flowing thereover for freezing said liquid adjacent said heat exchange surfaces and thereby at least partially restricting the flow of fluids thereover, and

controllable heating means for selectively heating the liquid adjacent each of said flat heat exchange surfaces to a

temperature above the freezing point of said liquid to permit fluid flow thereover,

said controllable heating means comprising a plurality of



electrical resistance heaters in the form of substantially flat films printed on said interior heat exchange surfaces, and means for connecting an electrical power source to said heaters.

4,258,741

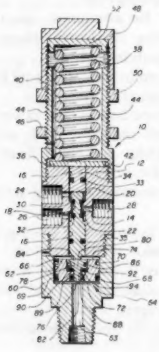
ADJUSTABLE PRESSURE SENSING PISTON MECHANISM

Harry Roger, Lafayette, La., assignor to J. Edwin Roy, Lafayette, La., a part interest

Filed Aug. 2, 1979, Ser. No. 63,081

Int. Cl.³ F16K *31/122*

U.S. Cl. 137—270 **12 Claims**



1. In a valve having a body and operable valve element therein, the improvement comprising a device mounted therewith for actuating said valve element, comprising:

(a) a housing having a piston chamber therein and a sensing port communicating with said chamber, and

(b) piston means slidable within said chamber and expand to said sensing port for actuating said valve element in response to fluid pressure applied to said sensing port, said piston means comprising:

(1) a first piston slidable within said chamber and having a concentric bore therethrough, and

(2) a second piston slidable within said first piston concentric bore for engaging and actuating said valve element,

wherein said piston means may be positioned within said piston chamber in

(i) a first orientation wherein the effective fluid pressure, area thereof exposed to said sensing port is the cross-sectional area of said first piston in order to provide a greater net force acting against said valve element to actuate said valve element when sufficient fluid pressure is applied to said sensing port, and

(ii) a second orientation wherein the effective fluid pressure area thereof exposed to said sensing port is the cross-sectional area of said second piston in order to provide a smaller net force acting against said valve element to actuate said valve element when sufficient fluid pressure is applied to said sensing port.

4,258,742

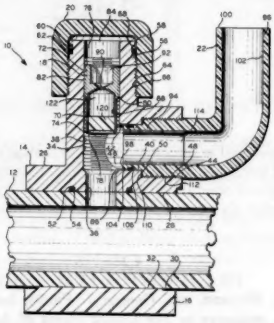
TAPPING APPARATUS

Jean H. Louthan, Dallas, and Ralph A. Wynne, Marshall, both of Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 3, 1979, Ser. No. 26,503

Int. Cl.³ F16K *43/00*; F16L *55/10*

U.S. Cl. 137—318 **23 Claims**



1. Apparatus for tapping a conduit, said apparatus comprising:

body means having first, second and third passageway means extending therethrough, said first passageway means being adapted for accepting and maintaining a conduit to be tapped and being in communication with a first end portion of said second passageway means, a first end portion of said second passageway means additionally being in communication with a first end portion of said third passageway means for providing flow communication between the first end portion of said second passageway means and a second end portion of said third passageway means;

cutter means for cutting an opening in a conduit located within said first passageway means, said cutter means having means for engaging said second passageway means;

said third passageway means including an internally threaded portion in one end portion thereof opposite said second passageway means, and a generally cylindrical inner surface in the third passageway means extending from a position proximate to said internally threaded portion toward said second passageway means;

a tubular member having first and second end portions, the first end portion of said tubular member having a first end face, a first generally cylindrical outer surface extending away from said first end face toward the second end portion of said tubular member, a circumferential annular groove in said first generally cylindrical outer surface, an externally threaded portion extending away from said first generally cylindrical outer surface toward the second end portion of said tubular member, said externally threaded portion being threadedly engageable with the internally threaded portion of said third passageway means, said first generally cylindrical outer surface being sized so as to be closely received within the generally cylindrical inner surface of said third passageway means when said externally threaded portion of said tubular member is threadedly engaged with the internally threaded portion of said third passageway means, said tubular member further including a passage extending therethrough and communicating with the first end face of said tubular member;

resilient annular seal means disposed in the circumferential annular groove of said tubular member for providing sealing engagement between said tubular member and the generally cylindrical inner surface of said third passageway means when said externally threaded portion of said tubular member is threadedly engaged with the internally threaded portion of said third passageway means; and

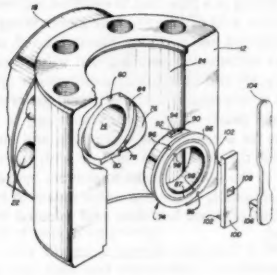
a tubular reinforcing member positioned within the passage through said tubular member and extending from a position proximate to the first end face of said tubular member toward the second end portion of said tubular member.

4,258,743

EXPANDING GATE VALVE HAVING MECHANICALLY SECURED SEATS

Roy R. Dare; Robert C. Houlgrave, and William S. Shelton, all of Houston, Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Jun. 4, 1979, Ser. No. 45,379
Int. Cl.³ F16K *43/00*
U.S. Cl. 137—327 **24 Claims**



1. A valve comprising:

a valve body presenting a fluid flow passage and a body cavity therein, said body cavity intersecting with said flow passage;

a valve member mounted in said body cavity for movement between open and closed positions relative to the flow passage;

a seat pocket in said valve body formed about the flow passage at a location adjacent said body cavity, said seat pocket including an undercut groove;

a pair of openings in the valve body providing access between said body cavity and undercut groove, said openings intersecting with said groove at substantially diametrically opposed locations thereon;

an annular valve seat in said seat pocket having a seating surface for contacting the valve member to form a seal therewith;

a single pair of lugs on said valve seat spaced from the seating surface thereof and projecting generally radially outwardly from the seat at substantially diametrically opposed locations thereon, said lugs being sized to fit through said openings for entry into said undercut groove and to fit in the groove upon subsequent rotation of the valve seat, thereby retaining the seat in the seat pocket; and

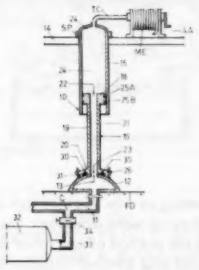
said lugs defining a pivot axis for the valve seat extending between the lugs along a diameter of the seat, said seat being pivotal to a limited extent about said pivot axis to permit effective sealing contact of said seating surface against said valve member.

4,258,744

VERTICALLY MOVABLE APPARATUS FOR FLUID DELIVERY FROM STATIONARY SOURCE

Gaetano Cutore, Via Asmara 33, Rome, Italy

Filed Feb. 12, 1979, Ser. No. 11,486
Claims priority, application Italy, Feb. 15, 1978, 48064 A/78
Int. Cl.³ B67D *5/04*
U.S. Cl. 137—355.27 **6 Claims**



1. A unit for connecting a stationary source of a fluid under pressure to a delivery apparatus vertically movable in respect thereto; wherein said stationary source comprises the end means of a tube supplying the fluid from a tank through a supply pump, and said delivery apparatus comprises a fluid delivery hose means wound on a convenient reel mounted on a platform vertically movable thereabove from an inoperative lowered position to a plurality of raised delivery positions and viceversa, said unit comprising: end connecting means integral with said supply-tube end means; two hollow members telescopically sliding in respect to each other and having the respective bores communicating with each other in fluid pressure tight relationship, one hollow member being anchored to said platform, to move bodily therewith, and connected to said delivery hose means and said other hollow member being secured on said supply-tube end means and provided with matching connecting means adapted to engage said end connecting means of said supply-tube end means, in order to connect said supply tube to said communicating bores of said two hollow members; sealing means arranged between said end connecting means and said matching connecting means, in order to assure a fluid pressure tight connection therebetween; stop means provided on said supply-tube end means to prevent said other hollow member from moving axially away from said supply tube end, yet permitting limited rotations in respect thereto; lowering and raising means supporting said platform; control means controlling said raising and lowering means; and pressured fluid receiving means adapted to accommodate the exceeding fluid under pressure due to the decrease in the overall capacity of the hollow members caused by the lowering of said platform.

4,258,745

CONTROL DEVICE FOR A LIQUID LEVEL MAINTAINING SYSTEM OR THE LIKE

Dean Nicholson, 1691 Reed St., Apt. #1, Lakewood, Colo. 80215

Filed Mar. 12, 1979, Ser. No. 19,659
Int. Cl.³ F16K *31/126*; G01F *23/20*; G05D *9/02*
U.S. Cl. 137—403 **19 Claims**

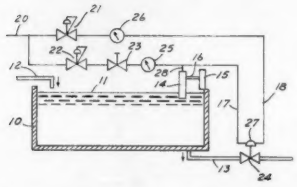
1. An apparatus for converting a liquid head to an analogue signal which comprises a casing having an opening therein and a loose flexible diaphragm closing and sealing said opening,

said casing being adapted to be mounted in a position above and adjacent the surface of a body of liquid in a liquid container, with said diaphragm being below the surface of the liquid at selected depths and subject to changes in liquid head pressure at such position

a freely movable actuating member and means for mounting said actuating member in said casing said actuating mem-

ber including a flat disc-like element positioned adjacent said opening for face engagement by said diaphragm upon changes in the liquid head,

means for biasing said member toward said diaphragm, said biasing means including, as at least a part thereof, the weight of said member and parts secured thereto,



said element having an area less than that of said opening and being spaced on all sides from the casing about said opening whereby the portion of said loose diaphragm between said casing and said element balloons inwardly upon the application of head pressure to said diaphragm, and

control means responsive to movement of said element for generating an analogue signal corresponding to the liquid head.

4,258,746

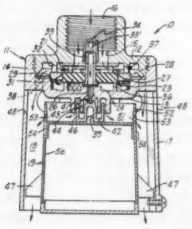
FLOAT VALVE WITH VARIABLE LIQUID BALLAST

George D. Hudson, 120 Hobbs Cir., Santa Paula, Calif. 93060

Filed May 29, 1979, Ser. No. 43,137

Int. Cl.³ F16K *31/18*

U.S. Cl. 137—414 **11 Claims**



1. In a float valve for replenishing a body of liquid from a pressurized liquid source in response to the level of the liquid body, wherein a control chamber is in communication with the pressurized source to develop pressure for closing a main valve against the pressurized liquid source, a pilot valve operated by a float in a float chamber opening and closing a bleeder port in communication with the control chamber, the pilot valve being mounted upon the float and movable therewith for opening and closing the bleeder port in response to the position of the float supported by the liquid, the improvement comprising an upstanding peripheral wall associated with the float and forming a reservoir for receiving liquid during actuation of the valve in order to increase the effective weight of the float, said reservoir including vent means in said wall for permitting liquid to escape from the reservoir at a controlled rate in order to reduce the relative effective weight of the float when the float valve is deactuated; and said pilot valve is centrally mounted on a wall at the top of the float within said reservoir.

4,258,747

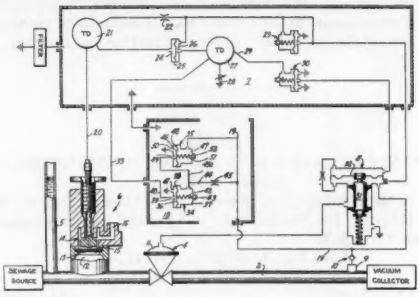
FLOW SYSTEM WITH PRESSURE LEVEL INTERLOCK CONTROL APPARATUS

Arnold G. Trobaugh, Milwaukee, Wis., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Filed Apr. 2, 1979, Ser. No. 26,175

Int. Cl.³ F16K *31/36*

U.S. Cl. 137—488 **11 Claims**



1. A flow control system having a pressure source means and a line valve means in a flow line to establish a pressurized flow through the line, said pressure source means being operable to establish a selected line pumping pressure level, comprising a controller for selectively operating said valve means to establish a flow cycle, said controller having means operating said valve means in response to an input signal generated independently of said pressure level and including a controllable switch means for actuating the controller, and interlock limit means to sense the pressure in the line with the valve closed and coupled to the switch means to prevent operation thereof and thereby actuation of the line valve means in response to a preselected line pressure less than said selected line pumping pressure level.

4,258,748

OPERATING ARMS FORMING PART OF LINE VALVES

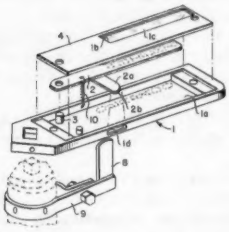
Isaac A. Guman, 1702 Ciudadela, Rivadavia 11962, Buenos Aires, Argentina

Filed Apr. 16, 1979, Ser. No. 30,553

Claims priority, application Argentina, Apr. 17, 1978, 271805; Sep. 21, 1978, 273797

Int. Cl.³ F16K *37/00*

U.S. Cl. 137—553 **11 Claims**



1. In an operating lever for a line valve used in pipelines conducting gaseous fluids, said valve including a body and a stem, said operating lever including an elongated body having a front surface facing the operator of the valve and a rear surface opposite said front surface and parallel thereto, said lever body rotatably connected at one end of said valve stem the opposite end being free, the improvement wherein said lever body is provided with a recess extending throughout a

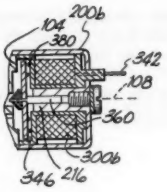
portion of its length between said front and rear surfaces, said rear surface having a legend thereon facing said front surface and indicating one position of said operating lever, said front surface having an aperture therein aligned with the legend on said rear surface, a shaft mounted on the inner face of said front surface perpendicular thereto and within said recess, a rocker element pivotally mounted on said shaft, said rocker element having an upper surface said aperture and a lower surface, said rocker element upper surface provided with a legend thereon indicating another position of said operating lever whereby, upon rotation of said operating lever, said rocker element is either moved into registry with said aperture to expose the legend on the upper surface of said rocker element or out or registry with said aperture to expose the legend on the rear surface of said lever to provide the operator of the line valve with a visual indication of one position or another position thereof.

4,258,749

DUAL SOLENOID VACUUM MODULATOR

Endre A. Mayer, Birmingham, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 28, 1978, Ser. No. 946,883
Int. Cl.³ F15B *13/044*
U.S. Cl. 137—596.17 **8 Claims**



1. A control valve comprising:

a valve body having a central axis, and a first end and a second end, each end containing a countersunk boss concentric to said central axis, said valve body further having a central bore coaxial to said central axis and joining each of said bosses, said central bore and each boss therein forming a pair of valve seats, said valve body further containing a first port, extending through said valve body connecting with one boss, a second port extending through said valve body connecting with the other boss and a third port extending through said valve body connecting with said central bore;

a split housing means having two housing sections for enclosing said first end and second end;

each housing section being a generally cylindrical cup-shaped structure containing sidewalls, a bottom, and a valve guide means having a central channel, which when assembled is coaxial with the central axis of said valve body;

a pair of valve means for controllably establishing pressure communications, said valve means slideably disposed within the central channel of said valve guide means and biased against said valve seat to close each end of said central bore;

a pair of electrically actuatable solenoid coil assemblies concentrically disposed in said housing about said valve guide means for generating a magnetic holding force for unseating said valve means from said valve seat;

limiting means for limiting the magnetic holding force exerted on said valve means including a non-magnetic bobbin assembly comprising:

a hollow center core;

a first plate attached to one end of said center core;

a second plate having sidewalls forming a cup-like structure attached to the opposite end of said center core so that said cup-like structure is directed away from said first plate;

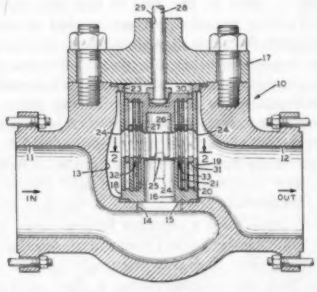
said center core, said first and said second plates cooperating so that when said bobbin assembly is placed into said housing section, said valve guide means is below said second plate and said center core is sized so that when said housing element is affixed to said valve body said bobbin assembly is firmly sandwiched between said housing and said valve body so that said sidewalls abut an end of said valve body forming said actuation chamber therebetween.

4,258,750

LABYRINTH TRIM VALVE

Ira H. Schnall, Erie, and John A. Brighton, State College, both of, PA, assignors to Copes-Vulcan, Inc., Lake City, Pa.

Filed Nov. 13, 1978, Ser. No. 960,248
Int. Cl.³ F16K *47/04;* F15D *1/00*
U.S. Cl. 137—625.3 **17 Claims**



1. A fluid flow restrictor means for use in a high pressure control valve or the like, which comprises

(a) a valve body including an inlet passage and an outlet passage,

(b) a valve seat arranged intermediate the inlet and outlet passages,

(c) a valve plug mounted for axial movement within the confines of said valve body and arranged for a mating relation with said valve seat to open and close said valve,

(d) a plurality of closely interfitting concentric cylinders alternately mounted to the valve plug and valve seat,

(e) means forming fluid flow paths through the interfitting cylinders from the inlet passage to the outlet passage including a plurality of slot-like expansion chambers formed through each of said cylinders and areas of restricted flow passage between expansion chambers with each of the expansion chambers of the internal cylinders of the interfitting concentric cylinders being separated from each adjacent expansion chamber of the two contiguous cylinders by one of said areas of restricted flow passage, thereby providing controlled dissipation of the fluid energy,

(f) the geometric dimensions of said fluid flow paths being variable in accordance with the axial movement of the cylinders mounted to said valve plug to thereby vary the dimensions of said restricted flow passages between expansion chambers.

4,258,751
SLIDE PLATE FOR VALVES

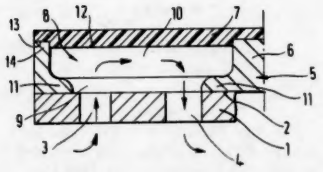
Jürgen Humpert, Hemer, Fed. Rep. of Germany, assignor to Friedrich Grohe Armaturenfabrik GmbH & Co., Hemer, Fed. Rep. of Germany

Filed Dec. 11, 1978, Ser. No. 968,482

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757672

Int. Cl.³ F16K *11/06*

U.S. Cl. 137—625.4 **4 Claims**



1. In a mixing valve having control elements formed by a valve seat plate and a valve slide plate, the valve seat plate being stationary and having first and second inlet apertures respectively coupled on one side to first and second liquid sources and having an outlet aperture coupled on said one side to an outlet port, the valve slide plate having a surface adapted to slidingly engage the other side of said valve seat plate, said valve slide plate including a transfer passage recessed into said surface, said valve slide plate being movable relative to said valve seat plate to place said transfer passage in communication said first and second inlet apertures and said outlet aperture to regulate the through-flow volume and/or mixture ratio of liquids, the improvement wherein said transfer passage comprising an aperture of a first predetermined cross-sectional area in said surface, and a chamber formed inside said valve slide plate, said chamber having a second predetermined cross-sectional area greater than said first predetermined cross-sectional area, and said chamber being in fluid communication with said aperture; and

wherein said valve slide plate comprises a flat sealing disc having said aperture; and

a covering and guiding section including a surface having a channel adapted to receive and sealingly engage an edge portion of said flat plate;

said chamber comprising a recess in said covering and guiding section, said recess extending around said aperture.

4,258,752
CONTROL VALVE WITH TWO ROTARY VALVE ELEMENTS SUPPORTED IN A HOUSING AND ACTED UPON AXIALLY BY PRESSURE

Karl-Heinz Liebert, Schwabisch Gmund, and Werner Tischer, Bobingen, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

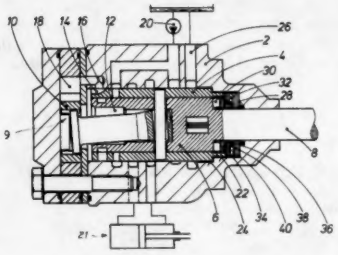
Filed Sep. 28, 1979, Ser. No. 79,838

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1978, 2842735

Int. Cl.³ F15B *9/08*; F16C *19/54*

U.S. Cl. 137—625.21 **6 Claims**

1. In a control valve for a hydrostatic steering system or the like having a housing (**2**) and two slide valve elements (**4, 6**) rotatable relative to each other and the housing, and wherein said slide valve elements are axially biased by pressure toward an abutment (**28**) in the housing, the improvement residing in axial thrust transmitting means including: two axial anti-friction bearings (**30, 32**) radially overlapping each other, one of the bearings (**30**) being engaged by one of the slide valve elements (**6**), and two annular disks (**34, 40**) radially overlapping each other and axially positioned between the abutment and said one of the slide valve elements transmitting axial thrusts independently of each other.



4,258,753
FLUIDIC SWITCH

Rudolf Limpaecher, Topsfield, Mass., assignor to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed May 18, 1979, Ser. No. 40,195

Int. Cl.³ F15C *1/12*

U.S. Cl. 137—806 **6 Claims**

1. A fluidic switch comprising:

(a) a first interaction chamber;

(b) first means for issuing a first deflectable continuous jet of fluid to be controlled under pressure through said first interaction chamber;

(c) first and second reception channels having entrances from said first interaction chamber and located to receive said first continuous jet selectively according to the direction of flow of said first continuous jet;

(d) first and second control means disposed in opposed relationship adapted to controllably issue streams of fluid impacting against said first continuous jet to deflect said first continuous jet to selectably flow into one or the other of said first and second reception channels;

(e) first and second orifices for receiving fluid flow from respectively said first and second reception channels;

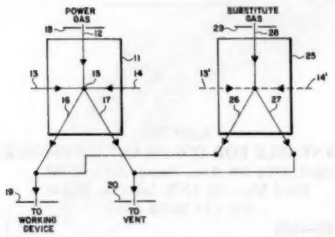
(f) a second interaction chamber;

(g) second means for issuing a second deflectable continuous jet of substitute fluid under pressure through said second interaction chamber;

(h) third and fourth reception channels having entrances from said second interaction chamber and located to receive said second continuous jet selectably according to

the direction of flow of said second continuous jet, the exit of said third reception channel being coupled to said first reception channel and the exit of said fourth reception channel being coupled to said second reception channel; and

(i) flow control means effective to deflect said second continuous jet of substitute fluid in such direction that said second continuous jet of substitute fluid flows into said



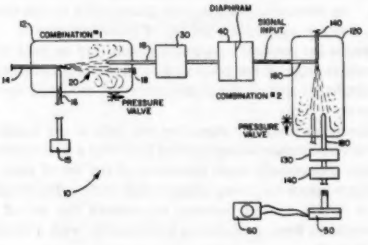
third reception channel when said first continuous jet of fluid flows into said second reception channel, and said second continuous jet of substitute fluid flows into said fourth reception channel when said first continuous jet of fluid flows into said first reception channel, whereby when said second jet of substitute fluid flows substantially only through one of said orifices, said first jet of fluid flows substantially only through the other of said orifices.

4,258,754

METHOD AND APPARATUS FOR FLUID SOUND AMPLIFICATION AND DETECTION OF LOW FREQUENCY SIGNALS

Charles G. Pickett, 293 Greenbrook Rd., North Plainfield, N.J. 07060

Filed Jan. 15, 1979, Ser. No. 3,285
Int. Cl.³ F15C *1/02*
U.S. Cl. 137—819 **6 Claims**



1. A fluid amplifier device for low frequencies comprising: a housing having;

emitter means aligned along a predetermined axis for converting fluid under pressure into a laminar stream;

signal input means associated with said emitter for traversely deflecting the laminar stream; and

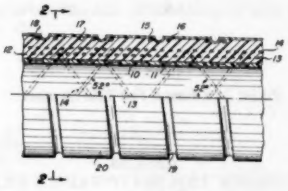
at least one receiver means aligned along an axis substantially parallel to said predetermined axis but offset a predetermined distance therefrom, wherein said housing is provided with means for maintaining pressure in said housing within a desired range, said desired range of pressure is from a minimum of 0.050 inches of H_2O to a maximum of 0.070 inches of H_2O, said signal input and receiver means each include conical tips which are extremely thin near the openings thereof, and wherein the extremely thin tips of the signal input port and receiver are in the range of 0.001 to 0.003 inches in thickness.

4,258,755

HELICAL WIRE REINFORCED HOSE

Charles D. Higbee, Buena Park, Calif., assignor to Bandag Incorporated, Muscatine, Iowa

Filed Apr. 5, 1979, Ser. No. 27,600
Int. Cl.³ F16L *11/08*
U.S. Cl. 138—122 **4 Claims**



1. A flexible hose comprising: an inner tubular liner defining a smooth-surfaced bore; a relatively thick layer of resilient material surrounding the liner and incorporating circumferentially-extending reinforcing material; a pair of parallel spiral body wires embedded in said resilient layer radially outwardly of said reinforcing material and close to the external surface of said resilient layer the wires of said pair being closely spaced from each other and the pitch of said pair being greater than the distance between the wires of said pair so that there is a narrow space between the wires of said pair; a spiral groove formed in the external surface of said resilient layer, said groove lying between the wires of said pair in said narrow space such that the side walls of the groove are adjacent to and supported by the wires of said pair, the pitch of said pair of wires and the positions of the wires of said pair relative to said groove being such that when the hose is bent said pair of wires and said groove cooperate to prevent inward and outward bending of said resilient layer thereby minimizing kinking of the hose and maintaining the bore of the tubular lining smooth.

4,258,756

COMPOSITE SHELL

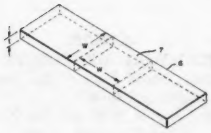
John J. Gilman, Morristown, and Ralph R. Saunders, Lafayette, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Aug. 27, 1979, Ser. No. 70,207
Int. Cl.³ F16L *9/16*
U.S. Cl. 138—142 **8 Claims**

1. A composite thin-walled shell, comprising:

(a) a plurality of substantially orthogonally-wrapped concentric layers, each of said layers being a glassy alloy strip of high transverse aspect ratio helically wrapped about the axis of concentricity, and with adjacent layers having alternating directions of wrap, further provided that the ratio of the inner radius to the combined thickness of the layers is at least about 10; and

(b) bonding means for providing a joining shear strength between said layers and between said strips within each



layer at least about equal to the tensile strength of said glassy alloy strip divided by said transverse aspect ratio.

4,258,757

Patent Not Issued For This Number

4,258,758

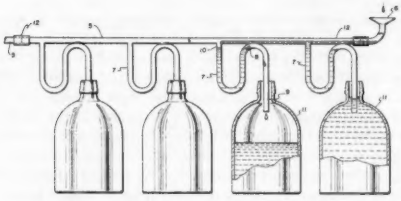
AUTOMATIC LIQUID-CONTAINER FILLER

Nils Nygards, 7435 Highway 65 Northeast, Minneapolis, Minn. 55432

Continuation of Ser. No. 913,590, Jun. 8, 1978, abandoned. This application Aug. 31, 1979, Ser. No. 71,696

Int. Cl.[3] B65B *3/26*

U.S. Cl. 141—35 **9 Claims**



1. An automatic liquid-container filler for sequentially and automatically filling a plurality of open containers having their openings below the filler, comprising:

(a) a generally horizontally extending elongated header conduit adapted to receive liquid therein for free flow conveyance to a plurality of containers;

(b) a plurality of non-valved liquid drain-trap members carried by said conduit and each having an upper liquid-trapping level disposed below said header conduit and above the container openings;

(c) a plurality of inlet tubes spaced longitudinally of said header conduit and connected thereto in liquid-receiving relation at locations spaced longitudinally thereof;

(d) one each of said inlet tubes being connected to one of said drain-trap members for conveying liquid from said header conduit to its associated drain-trap member in free-flowing relation; and

(e) a plurality of filler tubes, one each of which is connected to one of said drain-trap members in liquid-receiving relation at an elevation above said upper liquid-trapping level and extending downwardly therefrom to a level sufficiently far therebelow to enable a hydrostatic pressure to be developed therewithin equal to that created in its associated inlet tube when said filler tube is inserted into an open container and the latter is filled sufficiently to cover the lower end of said filler tube.

4,258,759

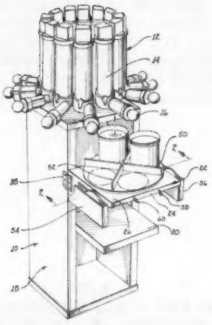
TURNTABLE FOR COLORANT DISPENSERS

John J. Achen, 1901 5th Ave., Yuma, Ariz. 85364

Filed Mar. 29, 1979, Ser. No. 25,185

Int. Cl.[3] B65B *43/50*

U.S. Cl. 141—100 **7 Claims**



1. A platform for locating each paint container of a set of paint containers in sequential operating relationship with a colorant dispenser having a framework supporting a turret and a plurality of paint cannisters and discharge units mounted upon the turret, said platform comprising in combination:

(a) a base locatable in operative relationship to the turret;

(b) a tray for supporting the set of paint containers;

(c) means for rotatably supporting said tray on said base to position each of the paint containers in sequence beneath a discharge unit of the paint cannisters mounted upon the turret;

(d) means for pivotally attaching said base to the framework to accommodate swinging said base into a first position to place sequentially each container of the set of paint containers into a receiving relationship with a discharge unit and into a second position to remove the set of paint containers from a receiving relationship with a discharge unit; and

(e) means for latching said base in said first position during dispensation of fluid from a discharge unit;

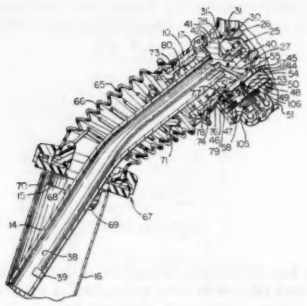
whereby, a colorant is dispensible sequentially into each paint container of the set of paint containers by rotation of said tray and operation of the respective discharge unit after said base has been located in said first position.

4,258,760

ARRANGEMENT FOR SENSING THE PRESENCE OF LIQUID IN A VAPOR LINE

Glenn E. Moore, Cincinnati, Ohio, assignor to Dover Corporation, New York, N.Y.

Filed Jun. 4, 1979, Ser. No. 45,205
Int. Cl.[3] B65B *31/06*
U.S. Cl. 141—206 **24 Claims**



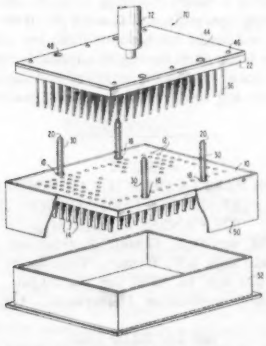
1. An arrangement for sensing the presence of liquid in a vapor line including a body having an inlet communicating with a source of liquid and vapor and an outlet communicating with an area for receiving vapor, said body having passage means therein connecting said inlet and said outlet, and movable means disposed in said body and movable between a non-blocking position in which said movable means does not block said passage means and a blocking position in which said movable means blocks said passage means, said movable means moving to its blocking position when a selected predetermined quantity of liquid flows into said inlet of said body in a selected predetermined period of time whereby the presence of liquid is sensed due to said movable means being in its blocking position without venting any liquid or vapor to the ambient.

4,258,761

REHYDRATOR

John T. Bennett, Jr., 18025 Lafayette Dr., Olney, Md. 20832

Filed May 3, 1979, Ser. No. 35,868
Int. Cl.[3] B65B *3/12*
U.S. Cl. 141—242 **8 Claims**



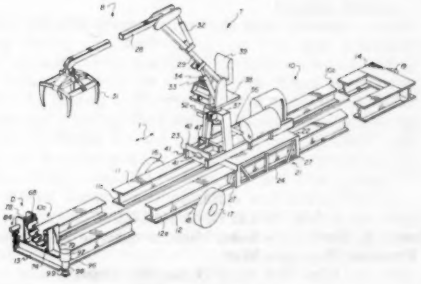
1. A rehydrator comprising first plate means having at least one aperture extending therethrough, at least one barrel means secured in said aperture and extending downwardly perpendicular to said first plate means, said barrel means having an end remote from said first plate means adapted to be immersed in a liquid guide means secured to said first plate means and extending upwardly perpendicular thereto, second plate means guided on said guide means for reciprocating movement toward and away from said first plate means and at least one plunger means mounted for movement with said second plate means and extending into said barrel means for sliding movement therein, said plunger means having a loose fit within said barrel means and having a length such as to extend beyond said end of said barrel means when said second plate means is moved into engagement with said first plate means and said end of said barrel means is immersed in a liquid to wet the end of said plunger to form a liquid seal between said plunger and said barrel so that upon retraction of said plunger means a predetermined amount of liquid will be drawn upwardly within the end of said barrel means.

4,258,762

APPARATUS FOR DELIMBING TREES

Donald Belanger, Rte. 7, Box 359, International Falls, Minn. 56649

Filed Mar. 5, 1980, Ser. No. 127,406
Int. Cl.[3] A01G *23/02*
U.S. Cl. 144—2 Z **12 Claims**



1. Apparatus for delimbing trees comprising, in combination, a frame including a longitudinally extending track, a carriage supported on said frame for movement along said track, a boom and grapple assembly on said carriage, means for driving said carriage along said track reciprocally between the end of said frame, means on said carriage for releasably gripping the butt end of a tree trunk to advance said tree trunk along said frame during the movement of said carriage along said track, a tree delimbing assembly adjacent one end of said frame, said tree delimbing assembly including flexible blade means, means for supporting said flexible blade means to permit said flexible blade means to encircle the entire peripheral surface of a tree trunk positioned by said boom and grapple assembly in said tree delimbing assembly whereby said movement of said carriage by said driving means from said one end of said frame with said gripping means in gripping engagement with the butt end of said tree grunk towards the other end of said frame permitting said flexible blade means to cut the limbs from the entire peripheral surface of said tree trunk.

4,258,763

CUTTING DEVICE HAVING A FLEXIBLE CUTTING ELEMENT

Fernando Figueredo, 524 Ridgewood Rd., Key Biscayne, Fla. 33149; Guillermo A. Valdes, 3235 SW. 64th St., Miami, Fla. 33155, and Armando R. Framil, 260 Woodcrest Rd., Key Biscayne, Fla. 33149

Filed Nov. 20, 1978, Ser. No. 962,289
Int. Cl.[3] A01G *23/08*
U.S. Cl. 144—34 R **28 Claims**

1. A cutting apparatus comprising:

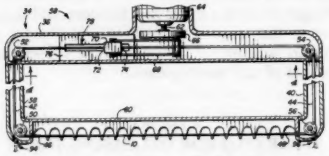
(a) a flexible cutting element having first and second ends

and cutting teeth disposed at intervals in a complete circle around the periphery thereof along a predetermined length;

(b) a frame coupled to said cutting element for receiving and guiding said cutting element including

i. a base

ii. a first arm having first and second ends, said first end being coupled to said base; and



iii. a second arm having first and second ends, said first end being coupled to said base; and

c. means coupled to said cutting element and to said base for imparting an oscillatory motion to said cutting element to enable the oscillating teeth of said cutting element to cut a selected material.

4,258,764

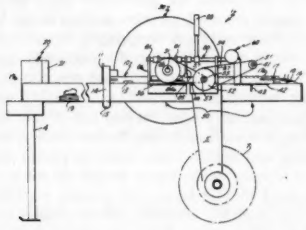
LOG SPLITTING MACHINE

Thomas L. Gerst, Twin Lake, Mich., assignor to 21st Century Products, Muskegon, Mich.

Filed Mar. 21, 1979, Ser. No. 22.681

Int. Cl.[3] B27L *7/00*

U.S. Cl. 144—193 R **37 Claims**



1. A wood splitter including one of a head and cutter mounted on a ram and the other fixedly positioned in opposition thereto and in the path thereof whereby a piece of wood placed therebetween will be split upon movement of said ram, the improvement in said wood splitter comprising: an energy storing flywheel; a motor for driving said flywheel; drive train means connecting said motor and said flywheel whereby said flywheel is driven by said motor; ram drive means for driving said ram forwardly; first clutch means operably mounted between said flywheel and said ram drive means for selectively engaging and disengaging same whereby said ram is driven forwardly by said flywheel when said ram drive means and said flywheel are engaged; second clutch means in said drive train means for effectively disengaging said motor from said drive means and said flywheel when loads on said flywheel would otherwise cause undue loading on said motor.

4,258,765

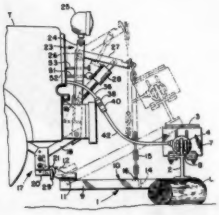
LOG SPLITTER FOR A TRUCK HAVING A THREE-POINT SNOWPLOW HITCH AND HYDRAULIC PRESSURE SYSTEM

Roy A. Suomi, 10594 Ridgewater Dr., Painesville, Ohio 44077

Filed May 21, 1979, Ser. No. 40,949

Int. Cl.[3] B27L *7/00*

U.S. Cl. 144—193 A **6 Claims**



1. A log splitter attachment for a motor vehicle having a three-point hitch at its front end including a pair of lower hitch points and an upper hitch point and having a hydraulic pressure system in its engine compartment including an engine driven pump, a reservoir, and a four-way control valve operatively interconnected together so that upon actuation of said valve either one of a pair of conduits therefrom accessible from the front of the vehicle is a fluid pressure line while the other one is a fluid return line; said attachment comprising an elongated horizontally extending beam having secured thereonto adjacent its respective ends a wedge and a double acting hydraulic cylinder including a pair of flexible conduits adapted to be connected to said pair of conduits; said beam having a pusher plate longitudinally slide guided thereon; said plate being operatively connected to the piston rod of said cylinder for movement of said plate from a retracted position whereat a log may be placed lengthwise on said beam between said plate and wedge to a log splitting position whereat said plate has forced the log into wedging and splitting engagement with said wedge responsive to actuation of said cylinder; said beam having secured to the bottom thereof one end of a transversely extending frame of which the other end remote from said beam has a pair of hinge brackets with aligned openings parallel to said beam and adapted to be pivotally pinned to said lower hitch points; said frame between said brackets and beam having an upwardly extended support element adapted to be connected at its upper end to said upper hitch point for supporting said attachment in a raised traveling position with said beam and frame swung upwardly and toward the front end of the vehicle about said lower hitch points from log splitting position; said upper hitch point having an adjustable connection to said support element to vary the length of said support element to determine the log splitting and traveling positions of said attachment.

4,258,766

PRESS FOR PANELS OR SIMILAR BODIES WITH LARGE EXTENSION IN COMPARISON TO THE THICKNESS THEREOF

Hendrikus J. M. van Dijk, Gemert, Netherlands, assignor to Gebroeders van Dijk B.V., Gemert, Netherlands

Filed Apr. 16, 1979, Ser. No. 30,540

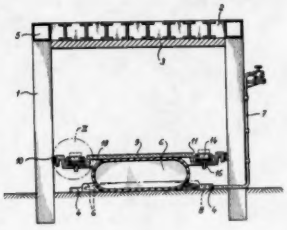
Claims priority, application Netherlands, Apr. 14, 1978, 7804000

Int. Cl.[3] B27D *3/00*

U.S. Cl. 100—295 **2 Claims**

1. A press comprising a lower press platen having an upper pressing surface and being movable up and down, and rolling bodies provided on said press platen for easily moving articles to be pressed into and out of the press, characterized by supporting means carried in depressed portions of said press platen

and being vertically movable with respect thereto, said rolling bodies being rollably supported by said supporting means, said supporting means being provided with parts extending downwardly below said press platen, and stationary press structure positioned below said press platen, whereby when the press platen is moved to its lower non-pressing position the downwardly extending parts of the supporting means contact said stationary press structure and are supported thereon, thereby moving said supporting means upwardly with respect to said press platen so that the upper ends of said rolling bodies are in positions above said upper pressing surface of said press platen



to allow easy movement of the articles to be pressed over said rolling bodies into and out of the press, and when the press platen is lifted from its lower non-pressing position to exert its pressing action, said supporting means will at first remain stationary with said downwardly extending parts thereof supported on said stationary press structure so that said press platen moves upwardly with respect to said supporting means until said supporting means are again carried in said depressed portions of said press platen in positions in which the upper ends of said rolling bodies no longer protrude above said upper pressing surface of said press platen.

4,258,767

TIRE AND WHEEL RIM ASSEMBLIES

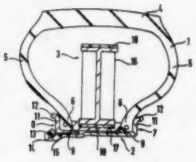
Ralph Wilde, Semele, Near Leamington, England, assignor to Dunlop Limited, London, England

Filed Mar. 12, 1979, Ser. No. 19,912

Claims priority, application United Kingdom, Mar. 28, 1978, 12068/78

Int. Cl.³ B60C *17/00*

U.S. Cl. 152—158 **18 Claims**



1. A pneumatic tire and wheel rim assembly comprising a pneumatic tire having a tread, a pair of sidewalls and a pair of axially spaced beads, a wheel rim having a pair of axially spaced bead seats each of which locates a respective one of said tire beads, support means extending circumferentially around said rim between said bead seats for supporting said tire when in a deflated condition, said support means being rotatable relative to said rim when said tire is in a deflated condition and lubrication means carried by said support means for releasing lubricant between a radially inner surface of said support means and a confronting running surface on said rim when said support means becomes load bearing to facilitate rotation of said support means relative to said rim, said lubrication means being carried in a container in a recess open at one end leading to the confronting running surface on the rim and closed at the other end by a removable closure member, and means resiliently biasing the lubricant container towards the confronting running surface on the rim.

4,258,768

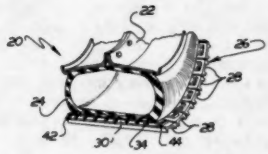
FASTENER ASSEMBLY

Walter R. Pamer, Parma, and Terry D. Capuano, Hinckley, both of Ohio, assignors to The Lamson & Sessions Co., Cleveland, Ohio

Filed Dec. 26, 1979, Ser. No. 106,476

Int. Cl.³ B60C *27/00*

U.S. Cl. 152—176 **8 Claims**



1. An assembly comprising an externally threaded member having leading and trailing end portions, said externally threaded member having a thread convolution with a leading flank surface disposed on a side of the thread convolution toward the leading end portion of said externally threaded member and a trailing flank surface disposed on a side of the thread convolution toward the trailing end portion of said externally threaded member, said trailing flank surface having a greater length measured between root and crest portions of said external thread convolution than said leading flank surface, an internally threaded member having leading and trailing end portions, said internally threaded member having an internal thread convolution with a leading end portion which is disposed in the leading end portion of said internally threaded member and a trailing end portion which is disposed in the trailing end portion of said internally threaded member, said external thread convolution being engageable with said leading end portion of said internal thread convolution prior to engagement of said external thread convolution with said trailing end portion of said internal thread convolution, said leading end portion of said internally threaded member including a plurality of grooves each of which extends at least part way through said internal thread convolution from an outer side surface of said internally threaded member, said internal thread convolution having a leading flank surface disposed on a side of the internal thread convolution toward the leading end portion of said internally threaded member and a trailing flank surface disposed on a side of the internal thread convolution toward the trailing end portion of said internally threaded member, said trailing flank surface of said internal thread convolution having a greater length measured between root and crest portions of said internal thread convolution than said leading flank surface of said internal thread convolution, and means for expanding the leading end portion of said internally threaded member and contracting the trailing end portion of said internally threaded member to clampingly engage a turn of the external thread convolution with a turn of the internal thread convolution disposed in the trailing end portion of said internally threaded member, said means for expanding the leading end portion of said internally threaded member and contracting the trailing end portion of said internally threaded member including the relatively long trailing flank surfaces of said internal and external thread convolutions, first surface means connected with said trailing end portion of said externally threaded member for holding said externally threaded member against axial movement relative to said internally threaded member after said external thread convolution has engaged said internal thread convolution throughout the entire

length of said internal thread convolution, and second surface means connected with said internally threaded member for holding said internally threaded member against axial movement relative to said externally threaded member after said internal thread convolution has engaged said external thread convolution throughout the entire length of said internal thread convolution.

7. An assembly comprising a circular wheel rim having a central axis, a tire carcass mounted on said wheel rim, and endless track means connected with said tire carcass for engaging a support surface, said endless track means including a mounting belt circumscribing said tire carcass, an elongated shoe member disposed adjacent to an outer side surface of said mounting belt, an elongated retainer member having a longitudinal axis extending parallel to the longitudinal axis of said shoe member and to the central axis of said wheel rim, and fastener means for interconnecting said shoe and retainer members with a portion of said mounting belt held between said shoe and retainer members, said fastener means including an externally threaded member which extends through circular openings formed in said shoe and retainer members, said externally threaded member having a head end portion disposed in abutting engagement with one of said shoe and retainer members and a free end portion projecting outwardly from the other one of said shoe and retainer members, an internally threaded member disposed in threaded engagement with said externally threaded member, said internally threaded member having a body section disposed in abutting engagement with said other one of said shoe and retainer members and having an expandable section extending into the opening formed in said other one of said shoe and retainer members, said expandable section of said internally threaded member being expandable from an initial size which is smaller than the opening in said other one of said shoe and retainer members to a second size which is the same as the size of the opening in said other one of said shoe and retainer members to eliminate any excess space in the opening in said other one of said shoe and retainer members, said externally threaded member having a thread convolution with a leading flank surface disposed on a side of the thread convolution away from the head end portion of said externally threaded member and a trailing flank surface which is disposed on a side of the thread convolution toward the head end portion of said externally threaded member, said trailing flank surface having a greater length measured between root and crest portions of said external thread convolution than said leading flank surface, said internally threaded member having an internal thread convolution with a leading flank surface disposed on a side of the internal thread convolution toward said expandable section and a trailing flank surface disposed on a side of the internal thread convolution toward said body section, said trailing flank surface of said internal thread convolution having a greater length measured between root and crest portions of said internal thread convolution than said leading flank surface of said internal thread convolution, and means for expanding the expandable section of said internally threaded member to eliminate any excess space in the opening in said other one of said shoe and retainer members and for contracting the body section of said internally threaded member to clampingly engage a turn of the external thread convolution with a turn of the internal thread convolution disposed in the body section of said internally threaded member.

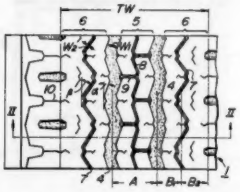
4,258,769

PNEUMATIC TIRES FOR HEAVY VEHICLES

Shigeo Makino, Tokorozawa; Shigeo Watanabe, Kokubunji, and Toshiyuki Sogi, Higashi-Yamato, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Jul. 2, 1976, Ser. No. 702,312
Claims priority, application Japan, Mar. 15, 1976, 51-27986
Int. Cl.³ B60C *11/04, 11/12*
U.S. Cl. 152—209 R **11 Claims**

1. A pneumatic tire for heavy vehicles comprising: a block-rib type tread provided at its center portion with a block pattern and at its two side portions provided with a rib pattern, a radial carcass, and a belt interposed between said tread and said carcass and having a high rigidity in the circumferential direction of the tire, said tread having a pair of wide zigzag or wavy grooves extending circumferentially of said tread and substantially V-shaped in cross-section, said grooves dividing said tread into a center portion and two side portions, each of said wide grooves having a width at the surface of said tread in the range of 5% to 9% of the width of said tread, said tread center portion having a width at the surface of said tread ranging from 20% of the width of said tread to 60% of the effective width of said belt, said two side portions having narrow zigzag or wavy grooves extending circumferentially of said two side portions and dividing said two portions into a region facing the



center portion and a region facing the two shoulder portions, at least said region facing the two shoulder portions maintaining the circumferential continuity thereof, said center having narrow grooves defining a block pattern having a width at the surface of said tread of 0.5% to 2.5% of the width of said tread, and said region facing the two shoulder portions having a width which is 1.0 to 2.0 times the width of the region facing the center portion, said grooves defining said block pattern composed of a narrow circumferential groove and a narrow transverse groove and said block pattern formed on the tread center portion is divided into at least two rows of block groups by means of said narrow circumferential groove and each row of block groups is divided into respective blocks by means of said narrow transverse groove.

4,258,770

CURED RUBBER SKIM STOCK COMPOSITIONS HAVING IMPROVED METAL ADHESION AND METAL ADHESION RETENTION

James A. Davis, Uniontown, and Jung W. Kang, Clinton, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 22, 1979, Ser. No. 68,824
Int. Cl.³ B60C *9/16*
U.S. Cl. 152—330 R **8 Claims**

4. A tire having metallic reinforcing elements embedded in vulcanized rubber skim stock, said skim stock being characterized by having incorporated therein:

from about 2.0 to about 10.0 parts by weight of a resin comprising resin acids containing carboxylic acid groups and derived from crude wood rosin, per 100 parts of the rubber component in said rubber skim stock; and,

from about 0.05 to about 10.0 parts by weight of an inorganic cobalt salt, per 100 parts of the rubber component in said rubber skim stock.

4,258,771

TIRE AND RIM ASSEMBLY WITH DISPENSING MEANS MOUNTED IN A BALANCED ARRAY

Robert H. Snyder, Grosse Pointe Park, Mich., assignor to Uniroyal, Inc., New York, N.Y.

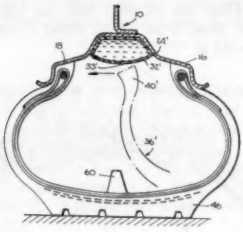
Filed Sep. 24, 1979, Ser. No. 78,319
Int. Cl.³ B60C *17/00*
U.S. Cl. 152—330 RF **11 Claims**

1. A wheel rim assembly comprising:

(a) a drop-center wheel rim having a pair of radially extensive flanges, a pair of generally axially extensive bead seats

located radially and axially inwardly of the flanges and a center portion located axially inboard of the bead seats, said center portion defining a well extending radially inwardly of the bead seats, and

(b) a plurality of dispensing means affixed to said wheel rim, with at least a portion of each of said dispensing means lying in said well, said dispensing means constituting a



balanced array consisting essentially of said dispensing means and any contents thereof and defining at least one clear arc of said well between adjacent dispensing means, said clear arc having a circumferential extent of at least one hundred and twenty degrees, so that during mounting and demounting of a tire, the clear arc of the well may receive portions of the tire beads to facilitate prying of the tire beads over a flange.

4,258,772

AIR VALVE TIGHTENING CONSTRUCTION FOR TIRE TUBE

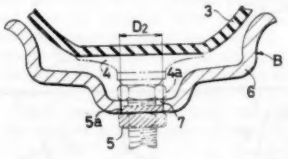
Eiji Nakasaki, Kawogawa, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Aug. 9, 1978, Ser. No. 932,162

Claims priority, application Japan, Aug. 22, 1977, 52/112692[U]

Int. Cl.³ B60C *5/00, 29/00*

U.S. Cl. 152—349 **2 Claims**



1. A tube assembly in combination with a tubeless tire rim having an air valve hole with a large diameter greater than the smaller diameter of the valve hole in a conventional tube tire rim, said tube assembly comprising:

(a) an inner tube provided with a threaded air valve stem having an outer diameter less than said smaller diameter;

(b) reversible tightening nut means provided with a thread for threading engagement with said threaded air valve stem; and

(c) integral flange means on one end of said nut means for insertion into said large diameter hole and for centering said valve stem in said large diameter hole.

4,258,773

TIRE FOR AIRPLANE WHEELS

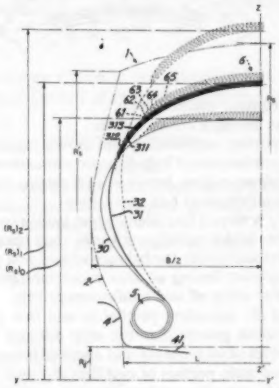
Michel R. de Saint-Michel, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Sep. 28, 1979, Ser. No. 79,959

Claims priority, application France, Oct. 5, 1978, 78 30534

Int. Cl.³ B60C *9/08, 9/20*

U.S. Cl. 152—352 R **4 Claims**



1. A vulcanized airplane tire of imposed size under an inflation pressure equal to the operating pressure and capable of withstanding a test pressure which is a four-fold multiple of the operating pressure, characterized by the fact that it comprises:

(a) a carcass reinforcement having substantially nonstretchable radial reinforcing elements which, under a tension corresponding to the operating pressure of the tire, have relative elongations that are less than 5% as compared with a zero tension, the carcass reinforcement being anchored to at least one bead ring in each bead; and

(b) radially outward of the carcass reinforcement, a crown reinforcement which is elastic and stretchable in the circumferential direction of the tire and which is formed of at least one ply of parallel elastic textile reinforcing cables having relative elongations upon rupture of between 10% and 40%, the angles which the parallel textile reinforcing cables of the crown reinforcement form with the circumferential direction of the tire being between 0° and 20°;

the crown reinforcement being such that, the tire being mounted on a standard rim and without load,

(b_1) when the inflation pressure is close to 10% of the operating pressure of the tire, the diameters of the tire at the equator and at the shoulders are at least 5% less than the corresponding diameters measured under an inflation pressure equal to the operating pressure, and the maximum axial width of the tire is greater than the corresponding width measured under an inflation pressure equal to the operating pressure, and

(b_2) when the inflation pressure is equal to the test pressure, the elongation of the crown reinforcement in the circumferential direction of the tire with respect to the length thereof when the inflation pressure is close to 10% of the operating pressure is such that the carcass reinforcement approximately reaches its natural equilibrium meridian profile.

4,258,774

REINFORCEMENT BELT FOR A PNEUMATIC TIRE

Henri J. Mirtain, and Jacques Vervin, both of Compiegne, France, assignors to Uniroyal, a Societe Anonyme, Clairoix, France

Filed Mar. 31, 1978, Ser. No. 892,065
Claims priority, application France, Apr. 13, 1977, 77 11117
Int. Cl.[3] B60C 9/18
U.S. Cl. 152—361 FP 7 Claims

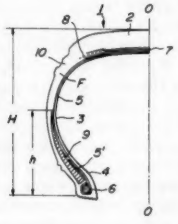
1. A pneumatic tire including:
a carcass having a crown region;
a tread portion surrounding said crown region; and
a tread reinforcement belt disposed circumferentially about said crown region, between said carcass and said tread, said reinforcement belt comprising:
a first ply with two free lateral edges having two lateral edge portions folded radially outwardly over upon said first ply to form skirts with the balance of said first ply forming a main portion having an axial width substantially equal to the axial width of said reinforcement belt;
a second ply extending parallel to said first ply having an axial width greater than the axial distance between said free edges of said first ply and disposed between said skirts and said main portion of said first ply; and
a third ply extending at least into the median zone of said reinforcement belt and disposed between said second ply and said main portion of said first ply.

4,258,775

PNEUMATIC RADIAL TIRE WITH ZERO DEGREE DAMPER LAYERS BETWEEN BELT PLIES

Masao Samoto, Kunitachi, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Sep. 14, 1978, Ser. No. 942,259
Claims priority, application Japan, Sep. 16, 1977, 52-110446
Int. Cl.[3] B60C 9/20, 15/06, 9/02
U.S. Cl. 152—361 R 10 Claims



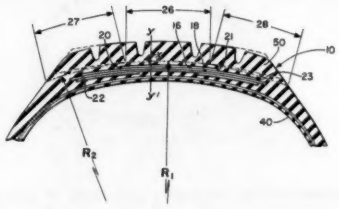
1. A pneumatic radial tire including a central annular tread, a pair of sidewalls extending from ends of said tread and bead portions including bead wires, and further including a fiber cord radial carcass extending between said bead portions and having ends folded about said bead portions and affixed thereat, and a belt layer having a plurality of metal cord layers above said carcass in said tread, said metal cord layers having cords at angles 65°–80° to radial planes including a rotating axis of the tire and wherein said cords from layer to layer are crossed to each other, said tire comprising at least one pair of rubber coated damper layers positioned between ends of belt metal cord layers in said belt layer and axially spaced apart and having cords arranged in directions substantially 90° to said radial planes, an end of said damper layer extending somewhat beyond the end of said belt layer.

4,258,776

RETREADED TIRE, METHOD AND APPARATUS

Noel E. Walters, Tallmadge; William F. Markey, Akron, and Duane F. Garman, Cuyahoga Falls, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 29, 1979, Ser. No. 7,082
Int. Cl.[3] B60C 9/20, 11/02; B29H 17/36, 21/01
U.S. Cl. 152—361 R 9 Claims



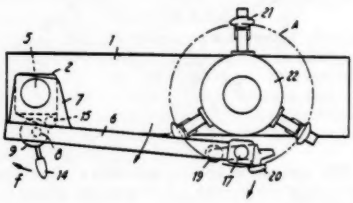
7. A retreaded radial carcass tire of the type having a plurality of circumferentially extending belt layers spanning its crown area wherein the outermost belt layer is of substantially less width than that of the belt layer lying immediately radially inward thereof, the existing crown area rubber material of the retreaded tire having been removed so as to leave not more than one-eighth inch thickness over the edges of the two most radially outward belt layers, the renewed rubber material of the retreaded tire being of substantially constant thickness throughout its length and width, the retreaded tire having a radius of transverse curvature of its radially outermost crown surface as measured in a radial plane of the retreaded tire which is less in either shoulder portion than in the center portion.

4,258,777

MECHANISM FOR ADJUSTING THE POSITION OF THE TOOL CARRIER ARM OF AN APPLIANCE FOR FITTING A TIRE ON THE RIM OF A WHEEL AND FOR REMOVING A TIRE FROM THE RIM OF A WHEEL

Francis du Quesne, Cleistraat 138, B-2630 Aartselaar, Belgium

Filed Jun. 22, 1979, Ser. No. 51,160
Claims priority, application Belgium, Jun. 27, 1978, 57098
Int. Cl.[3] B60C 25/08
U.S. Cl. 157—1.24 6 Claims



1. An improved appliance for fitting a tire on a rim of a wheel of a vehicle, of the type comprising:
a bed plate,
a plate rotatably mounted on said bed-plate,
clamps on said plate for clamping a wheel,
a vertical stationary pillar mounted on said bed-plate,
an arm pivoting around a vertical axis on said pillar in a horizontal plane above said plate,
a bar extending downwards from said arm,

a guiding wheel carried at the lower end of said bar and intended to separate a bead of the tire above the wheel rim,

a pressure wheel carried at the lower end of said bar and intended to drive a bead of the tire into a groove of the wheel rim all along the circumference of the wheel, wherein the improvement comprises an eccentric rotatably mounted between the arm and the pillar for pivoting slightly the arm around its pivot axis with respect to the pillar and so adjusting the position of the pressure wheel at a distance from the rim of the wheel on the plate.

4,258,778

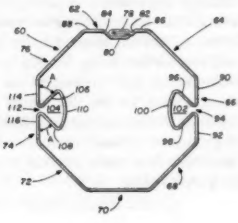
ROLLER BAR CONSTRUCTION

Albert E. Upton, 7502 Riverbrook, Dallas, Tex. 75230; Barney G. Upton, Irving, and Jack S. Craig, Dallas, both of Tex., assignors to Albert E. Upton, Dallas, Tex.

Continuation-in-part of Ser. No. 864,770, Feb. 15, 1978, abandoned. This application Jul. 19, 1978, Ser. No. 926,027

Int. Cl.[3] **A47H** *13/00;* **E04F** *10/06*

U.S. Cl. 160—383 **4 Claims**



1. An awning assembly for a recreational vehicle, which comprises:

a flexible awning having a leading edge and a trailing edge;

the trailing edge of said awning being secured to the recreational vehicle;

a roller bar for attachment to the awning, said roller bar comprising:

a hollow tube defined by a single piece of sheet metal roll-formed into a predetermined cross-sectional shape;

the shape of said tube being polygonal and defined by a plurality of substantially equilateral flat sides separated by bends;

said piece of sheet metal having opposed longitudinal edges which are folded back, hooked together and permanently crimped in interlocking engagement;

said tube including a longitudinal slideway integrally formed into the piece of sheet metal receiving and retaining the leading edge of said awning;

the slideway being peripherally spaced away from the crimped edges of the sheet metal defining said tube; and

at least one rigid foam plug disposed inside said hollow tube for substantially reinforcing and stiffening the roller bar against bending loads and other forces exerted by said awning.

4,258,779

METHOD AND APPARATUS FOR CONVEYING VERY FINE SOLID MATERIAL

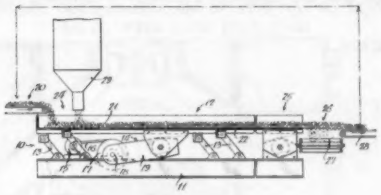
Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Continuation-in-part of Ser. No. 851,611, Nov. 14, 1977, abandoned. This application Feb. 23, 1978, Ser. No. 880,462

Int. Cl.[3] **F28C** *3/16;* **B65G** *27/16*

U.S. Cl. 165—1 **6 Claims**

1. The method for conveying fine particles by vibratory motion, wherein the particles are of a size which when subjected to vibratory conveying motion will fluidize rendering the particles substantially incapable of transport, which comprises providing a bed of particulate material of sufficient size as to be capable of being conveyed by vibratory motion, introducing the fine particles into said bed, subjecting the bed to



vibratory conveying motion to cause the particles to flow into the interstices of the bed of material and be conveyed therewith.

4,258,780

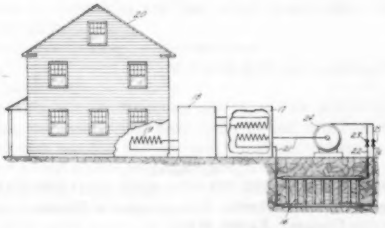
DUAL CYCLE HEAT PIPE-METHOD AND APPARATUS

Mikio Suo, Ellington, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 22, 1978, Ser. No. 972,598

Int. Cl.[3] **F25B** *27/02, 13/00*

U.S. Cl. 165—2 **17 Claims**



1. A dual cycle, gravity driven heat pipe system comprising upper and lower heat transfer fluid containing conduits connected by a series of gravity driven heat pipes, the ends of said heat pipes extending into substantially the entire internal diameter of said fluid containing conduits, the heat pipes containing a second heat transfer fluid in fluid isolation from the first heat transfer fluid and having a vapor pressure at or near atmospheric pressure at temperatures between about 30° F. and 100° F., said system buried in the ground below the frost line and connected to a heat pump system.

16. A method of heating and cooling a building structure with a conventional heat pump circulation pipe system containing a first heat transfer fluid, the improvement comprising at least partially heating or cooling the heat transfer fluid in the circulation pipe by passing said fluid in a fluid circulation pipe of the apparatus of claims **1** or **2**.

4,258,781

SUSPENSION FOR A THERMALLY HEAVY LOAD CYLINDRICAL PIPE ASSEMBLY

Rolf Dörling, and Hans Hemschemeier, both of Gummersbach, Fed. Rep. of Germany, assignors to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Nov. 15, 1978, Ser. No. 960,834

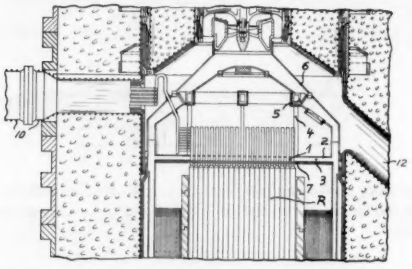
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1977, 2750924

Int. Cl.[3] **F28F** *9/00*

U.S. Cl. 165—67 **1 Claim**

1. A suspension for a thermally high load cylindrical pipe assembly, which includes: a plate comprising means forming

chambers and having its periphery provided with inlets for connection with a supply of cooling medium, a plurality of pipes arranged above said plate and extending substantially parallel to the axis of said pipe assembly and being in communication with said chambers, a plurality of collecting elements,



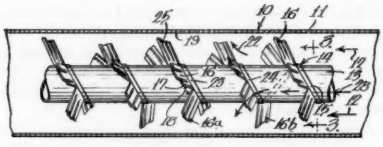
and a hollow supporting ceiling structure arranged above said pipe assembly and having said plurality of pipes firmly connected thereto, said hollow supporting ceiling being in communication with the plurality of pipes via the collecting elements.

4,258,782

HEAT EXCHANGER HAVING LIQUID TURBULATOR

Stephen S. T. Kao, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis.

Filed Jun. 28, 1979, Ser. No. 52,867
Int. Cl.[3] F28F *1/40*
U.S. Cl. 165—109 T **3 Claims**



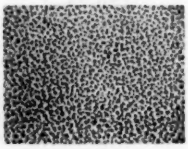
1. A heat exchange device having a liquid turbulator, comprising: a liquid flow tube; an inner cylinder of a diameter smaller than the inner diameter of the tube and located within the tube; and a turbulator arranged generally helically around the cylinder and having edgewise adjacent fins in the form of separate tongues in which each fin is at an angle of about 100°–110° from the inner cylinder in the direction of flow of the liquid flowing through the tube, each said fin being generally planar but formed with a radial channel intermediate the radial edges of the fin, adjacent edges of adjacent fins describing a divergent V from the cylinder toward the tube thereby describing channels between adjacent fins for directing the liquid outwardly toward the tube, longitudinally adjacent fins in successive reaches of said helix being spaced apart a distance equal to 0.8–1.2 times the inner diameter of the tube, the outer tip edge of each fin being spaced from the inner surface of the tube a distance equal to about 5 to 8% of the inner diameter of the tube.

4,258,783

BOILING HEAT TRANSFER SURFACE, METHOD OF PREPARING SAME AND METHOD OF BOILING

Clarence E. Albertson, Villa Park; George M. Nichols, Evanston, and John N. Rasmussen, Des Plaines, all of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 847,637, Nov. 1, 1977, Pat. No. 4,186,063.
This application Feb. 8, 1979, Ser. No. 10,458
Int. Cl.[3] F28F *13/18*
U.S. Cl. 165—133 **1 Claim**



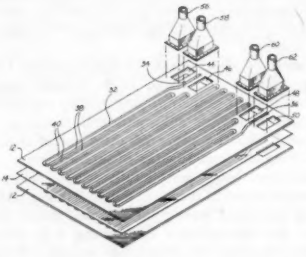
1. Heat exchange apparatus comprising a heat conductive wall having one surface adapted to be in contact with a boiling liquid and the other surface adapted to be in contact with a warm fluid, said one surface being formed by (1) mechanically forming non-continuous pits or craters on said surface; (2) electrodepositing a metal on the thus pitted surface at a high current density to produce dendrites and form honeycomb-like nucleate boiling surfaces on said surface; and (3) subsequently plating said dendrites at a lower current density to coat said dendrites with a metal plate.

4,258,784

HEAT EXCHANGE APPARATUS AND METHOD OF UTILIZING THE SAME

Clifford R. Perry, Renton, and Lloyd H. Dietz, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 7, 1978, Ser. No. 894,252
Int. Cl.[3] F28F *3/08*
U.S. Cl. 165—166 **8 Claims**



1. A heat exchange apparatus adapted to place a first fluid heat exchange medium into heat exchange relationship with a second heat exchange medium, said apparatus comprising:

a. a plurality of spacing plates, each of which has a perimeter portion and an interior portion providing at least one pair of elongate sidewalls defining a vertically through, horizontally extending elongate passageway which is open from a top surface to a bottom surface of its related plate, each of said passageways being arranged in a substantially identical pattern, said plates being stacked above one another in longitudinal and transverse alignment, with the perimeter portions being stacked in vertical alignment to form a perimeter of a heat exchange area, and with the interior portions being stacked in vertical alignment to position said passageways

one directly above the other, each passageway having a first end and a second end,

b. a plurality of thin film sheets, positioned intermittently between said spacing plates, with one sheet between each adjacent pair of spacing plates, so that each passageway is separated by a related pair of said sheets from the passageways immediately above and below, with each passageway being defined on side portions thereof by the sidewalls of the interior portion of its related plate, and on upper and lower portions by its related pair of sheets,

c. a distributing means for said fluid medium, said distributing means comprising:

1. a first manifold means connecting to the first ends of a first set of alternately spaced passageways,
2. a second manifold means connecting to the first ends of a second set of alternately spaced passageways positioned alternately between the passageways of the first set,
3. a third manifold means connecting to the second ends of the first set of alternately spaced passageways,
4. a fourth manifold means connecting to the second ends of the second set of alternately spaced passageways,

whereby said first heat exchange medium can be directed through said first set of alternately spaced passageway by means of said first and third manifold means, and said second heat exchange medium can be directed through such second set of alternately spaced passageways by means of said second and fourth manifold means, with heat exchange taking place across sheet portions separating vertically adjacent passageways, in a manner that one of said heat exchange mediums in one of said passageways is in heat exchange relationship with the other of said heat exchange mediums in the adjacent passageways immediately above and below.

4,258,785

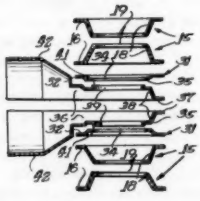
HEAT EXCHANGER INTERPLATE FITTING

Richard P. Beldam, Mississauga, Canada, assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 8, 1980, Ser. No. 119,737

Int. Cl.³ F28F 9/26

U.S. Cl. 165—175 **10 Claims**



1. An interplate fitting for a stacked plate heat exchanger wherein each plate in the stack comprises a pair of facing dished members joined by abutting peripheral flanges and having outwardly extending bubbles at the opposite ends, said bubbles of adjacent plates abutting and having axially aligned openings to form header tanks, the interplate fitting being inserted in place of a pair of abutting bubbles of two adjacent plates and having a pair of dished fitting plates provided with abutting peripheral edges and oppositely disposed bubbles having openings in axial alignment with said plate bubbles, and laterally extending semi-cylindrical conduit portions on said fitting plates communicating with said bubbles.

4,258,786

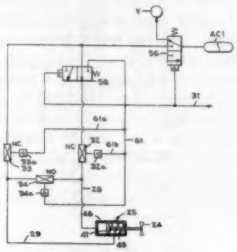
SAFETY VALVE OPERATING APPARATUS

Glen E. Lochte, Houston, and Lionel J. Milberger, Spring, both of Tex., assignors to FMC Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 912,275, Jun. 5, 1978, Pat. No. 4,193,449. This application Apr. 24, 1979, Ser. No. 32,973

Int. Cl.³ F16K 11/06; E21B 43/00

U.S. Cl. 166—72 **11 Claims**



1. A hydraulic valve for use with a source of pressurized hydraulic fluid and a downhole safety valve mounted in a petroleum well, said safety valve including a safety valve actuator having an inlet port, said hydraulic valve comprising:

a valve base having first and second inlets and an outlet;

means for connecting said base outlet to said safety valve inlet port;

a fluid accumulator;

a valve gate having first and second ports and a passageway therethrough;

means for slidably mounting said valve gate in said valve base to connect said base outlet to said first base inlet through said first gate port and to connect said accumulator to said second base inlet through said second gate port when said valve gate is in a first position, said gate passageway interconnecting said accumulator and said gate outlet when said valve gate is in a second position; and

valve actuator means for selectively moving said valve gate between said first and second positions.

4,258,787

SUBTERRANEAN WELL INJECTION APPARATUS

Amareswar Amancharla, League City, Tex., assignor to Baker International Corporation, Orange, Calif.

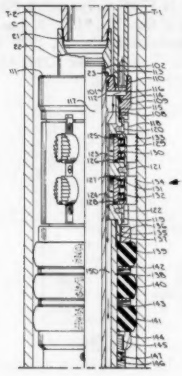
Filed Jul. 11, 1979, Ser. No. 56,574

Int. Cl.³ E21B 33/129, 34/08, 43/12

U.S. Cl. 166—120 **4 Claims**

1. In an apparatus for injecting fluid within a bore and immediate a production zone of a subterranean well, said well having casing extending therein, said fluid being transmitted through said bore above said apparatus through parallel fluid flow conduits, the improvement comprising: a packer assembly communicating to said fluid flow conduits and carriable by at least one said conduit; concentric flow means through said packer assembly for transmission of fluid and communicating with said fluid flow conduits and said production zone; receptacle means on said packer assembly communicating between one of said fluid flow conduits and said concentric flow means; and fluid pressure responsive casing gripping means on said packer assembly responsive to each of: (1) predeterminable pressure increase from fluid flow from the top of the well

within one of said flow conduits and (2) pressure within said well below said packer assembly, whereby said gripping means



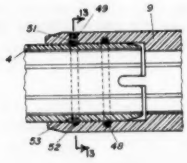
are urged to gripping engagement with said casing to prevent movement of said apparatus in one direction.

4,258,788

CPI CASING

Franklin D. Patton, West Vancouver, and James D. McFarlane, Vancouver, both of Canada, assignors to Westbay Instruments Ltd., West Vancouver, Canada

Filed Jul. 21, 1978, Ser. No. 926,646
Int. Cl.[3] E21B *23/00*
U.S. Cl. 166—185 **25 Claims**



1. Geological and geophysical casing apparatus comprising a unit adapted to be attached by fluid tight seals to a plurality of axially aligned similar units to form an apparatus to permit the taking of geological and geophysical readings and samples by probes moved therethrough,

the apparatus unit comprising

a cylindrical casing having circumferentially spaced axial grooves formed on its interior surface for orientation and vertical positioning of probes when said probes are moved longitudinally through the casing;

a coupler adapted to connect at one end to said casing and at an opposite end to a similar cylindrical casing of another similar unit;

alignment means formed on the first-mentioned casing and the coupler to co-operate to ensure alignment of the grooves in said first-mentioned casing with grooves in said similar casing in the apparatus when said unit is connected to the similar unit, and

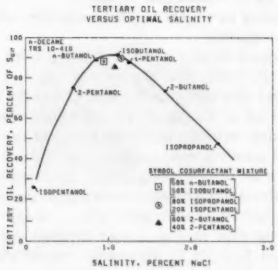
stop means at the coupler for the purpose of obtaining a fixed vertical position reference for the probes relative to the coupler.

4,258,789

COSURFACTANT BLENDS FOR OIL RECOVERY SURFACTANT SYSTEM

James H. Hedges, and Gilbert R. Glinsmann, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 31, 1979, Ser. No. 71,609
Int. Cl.[3] E21B *43/22*
U.S. Cl. 166—252 **8 Claims**



1. A method for preparing an optimized aqueous surfactant system comprising:

(a) preparing a series of aqueous surfactant-cosurfactant-electrolyte systems at varying electrolyte concentrations using a relatively water insoluble cosurfactant, mixing oil to be displaced or its equivalent with the thus produced systems, allowing the resulting mixtures to equilibrate and determining the salinity at which the microemulsion phase formed on said equilibration has approximately equal volumes of oil and water, thus giving the optimal salinity concentration for this surfactant-cosurfactant combination;

(b) preparing a series of aqueous surfactant-cosurfactant-electrolyte systems at varying electrolyte concentrations using a relatively water soluble cosurfactant, mixing oil to be displaced or its equivalent with the thus produced systems, allowing the resulting mixtures to equilibrate and determining the salinity at which the microemulsion phase formed on said equilibration has approximately equal volumes of oil and water, thus giving the optimal salinity concentration for this surfactant-cosurfactant combination;

(c) preparing at least one series of aqueous surfactant-cosurfactant-electrolyte systems using a cosurfactant having a solubility intermediate that of the cosurfactant of (a) and the cosurfactant of (b), mixing oil to be displaced or its equivalent with the thus produced systems, allowing the resulting mixture to equilibrate and determining the salinity at which the microemulsion phase formed on said equilibration has approximately equal volumes of oil and water, thus giving the optimal salinity concentration for each surfactant-cosurfactant combination;

(d) utilizing said systems of (a), (b) and (c) at optimal salinity to remove oil from a core and plotting the percentage oil recovered versus the salinity of each system;

(e) determining from said plot of (d) the unique salinity at which maximum oil recovery is obtained; and

(f) using the relationship that increasing more water soluble component of the cosurfactant increases the optimal salinity value and decreasing the more water soluble component of the cosurfactant decreases the optimal salinity, preparing an aqueous surfactant-cosurfactant-electrolyte system using a mixture of cosurfactants so as to give a surfactant system having an optimal salinity essentially corresponding to said unique salinity.

8. A process for recovering oil from a subterranean oil-bearing reservoir comprising the steps of injecting an aqueous

surfactant system into said reservoir, thereafter injecting a drive fluid into said reservoir and forcing said oil towards at least one recovery well and recovering said oil, said surfactant system corresponding to one prepared by the steps of:

(a) preparing a series of aqueous surfactant-cosurfactant-electrolyte systems at varying electrolyte concentrations using a relatively water insoluble cosurfactant, mixing oil to be displaced or its equivalent with the thus produced systems, allowing the resulting mixtures to equilibrate and determining the salinity at which the microemulsion phase formed on said equilibration has approximately equal volumes of oil and water thus giving the optimal salinity concentration for this surfactant-cosurfactant combination;

(b) preparing a series of aqueous surfactant-cosurfactant-electrolyte systems at varying electrolyte concentrations using a relatively water soluble cosurfactant, mixing oil to be displaced or its equivalent with the thus produced systems, allowing the resulting mixtures to equilibrate and determining the salinity at which the microemulsion phase formed on said equilibration has approximately equal volumes of oil and water, thus giving the optimal salinity concentration for this surfactant-cosurfactant combination;

(c) preparing at least one series of aqueous surfactant-cosurfactant-electrolyte systems using cosurfactants with a solubility intermediate those of (a) and (b), mixing oil to be displaced or its equivalent with the thus produced systems, allowing the resulting mixture to equilibrate and determining the salinity at which the microemulsion phase formed on said equilibration has approximately equal volumes of oil and water, thus giving the optimal salinity concentration for this surfactant-cosurfactant combination;

(d) utilizing said systems of (a), (b) and (c) at optimal salinity to remove oil from a core and plotting the percentage oil recovered versus the salinity of each system;

(e) determining from said plot of (d) the unique salinity at which maximum oil recovery is obtained; and

(f) using the relationship that increasing more water soluble component of the cosurfactant increases the optimum salinity value and decreasing the more water soluble component of the cosurfactant decreases the optimum salinity, preparing an aqueous surfactant-cosurfactant-electrolyte system using a mixture of cosurfactants so as to give a surfactant system having an optimal salinity essentially corresponding to said unique salinity.

4,258,790

WELL CEMENTING METHOD USING LOW FLUID-LOSS CEMENT SLURRY

Billy W. Hale, Aledo, Tex., assignor to The Western Company of North America, Fort Worth, Tex.

Filed Jan. 24, 1979, Ser. No. 5,954
Int. Cl.[3] E21B *33/14*
U.S. Cl. 166—293 **14 Claims**

1. In a method for cementing a subterranean well bore wherein a cement slurry is pumped downwardly through the well bore within the well casing, out through the open lower end of the casing, then upwardly in the annulus between the well casing and the wall of the well bore, the improvement consisting of utilizing a cement slurry comprising cement, from about 26 to about 60 percent water, and from about 0.75 to about 2 weight percent fluid loss additive, by weight of the cement, wherein said fluid loss additive further comprises from about 30 to about 70 weight percent polyvinylpyrrolidone, from about 5 to about 19 weight percent carboxymethylhydroxyethyl cellulose, and the sodium salt of naphthalene sulfonate.

4,258,791

THERMAL INSULATION METHOD

Israel M. Brandt, Plano, and Forrest A. Scearce, Houston, both of Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Jan. 29, 1980, Ser. No. 116,584
Int. Cl.[3] E21B *36/00, 43/24*
U.S. Cl. 166—302 **17 Claims**

16. A method of forming a thermal barrier across an annulus comprising:

substantially filling said annulus with a fluid comprising a liquid oleaginous phase, an aqueous phase, lime, an oleophilic polymer selected from the class consisting of polymers of an alkenylsuccinic anhydride containing from about 2 to about 8 alkenylsuccinic anhydride molecules per molecule of polymer, copolymers of an alpha-olefin containing from 10 to 24 carbon atoms and maleic anhydride, and mixtures thereof, and a water-in-oil emulsifier;

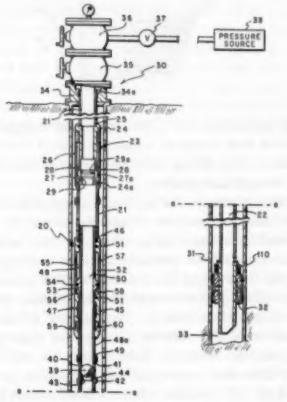
heating said fluid in said annulus to a temperature above about 130° F. for a time sufficient to gel the fluid in said annulus to a substantially grease-like consistency.

4,258,792

HYDRAULIC TUBING TENSIONER

Henry L. Restarick, Metairie, La., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Mar. 15, 1979, Ser. No. 20,811
Int. Cl.[3] E21B *17/00*
U.S. Cl. 166—315 **15 Claims**



1. A tool for applying tension to a tubing string, comprising:

a. a housing with a longitudinal bore extending therethrough;

b. means for attaching one end of the housing to a tubing string;

c. a sleeve, slidably disposed within the longitudinal bore, having a longitudinal passageway therethrough and one end of the sleeve extending from said longitudinal bore;

d. means for attaching the one end of the sleeve to a tubing string;

e. means for sealing between the longitudinal bore and the sleeve to form a fluid chamber;

f. a piston means, carried on the exterior of the sleeve, dividing the fluid chamber into two variable volume zones;

g. the housing having a first port communicating the exterior of the housing with one of the variable volume zones;

h. the sleeve having a second port communicating the longitudinal passageway with the other variable volume zone; and

i. means for allowing the sleeve to move in one direction within the longitudinal bore and preventing movement of

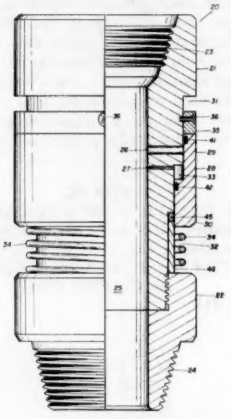
the sleeve in the other direction within the longitudinal bore.

4,258,793

OIL WELL TESTING STRING BYPASS VALVE

Thomas E. McGraw, Caracas, Venezuela, and John C. Zimmerman, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed May 16, 1979, Ser. No. 39,490
Int. Cl.[3] E21B *33/10, 47/00*
U.S. Cl. 166—315 **10 Claims**



1. In an apparatus for relieving fluid trapped between a preset packer and a closed tester valve in a drill stem testing string as the testing string is being seated in the preset packer, the improvement comprising:

check valve means in the walls of the apparatus for relieving fluid from the interior of the apparatus to the exterior surrounding the apparatus when the interior fluid pressure exceeds the exterior pressure, and for closing and preventing fluid flow from the exterior to the interior when the exterior fluid pressure exceeds the interior pressure;

slidable mandrel means in the interior of said apparatus responsive to the exterior pressure for sliding from a first open position wherein fluid access to said check valve means from the interior of said apparatus is opened, to a second closed position wherein fluid access to said check valve means from the interior of said apparatus is blocked, said slidable mandrel means having pressure responsive means for moving said slidable mandrel means from said first position to said second position when said exterior pressure is increased; and

delay means responsive to said slidable mandrel means for delaying the movement of said slidable mandrel means for a length of time after said exterior pressure is increased.

9. A method of testing an earth formation intersected by a borehole extending from the surface comprising:

a. setting a production packer in the borehole above the formation to be tested;

b. lowering into the borehole, a testing string having a flow passage throughout its length, a seal assembly for engagement with the packer, an apparatus above said seal assembly including a check valve for passing fluid flow from said flow passage to the well annulus and for blocking fluid flow from the well annulus to the flow passage, and a blocking means responsive to well annulus pressure increases for sealingly blocking access to said check valve from the flow passage;

c. engaging the seal assembly with the packer for forming a fluid tight seal above the formation to be tested and separating the formation from the well annulus above the packer;

d. further lowering the test string for seating the seal assembly in the packer;

e. responsive to fluid pressure increases in said flow passage during the further lowering step, opening said check valve through the walls of the testing string above the packer for relieving the pressure increases in the flow passage;

f. determining at the surface the location of hanging means for supporting the weight of the testing string in the well bore with the sealing assembly engaged with the packer without undue weight being applied to the packer;

g. withdrawing the testing string from the borehole a sufficient distance to install said hanging means;

h. during said withdrawing step, controlling the rate of blocking of access to said check valve by said blocking means a sufficient time to allow disengagement of said sealing means from said packer before access to said check valve is sealingly blocked;

i. installing said hanging means in said testing string;

j. repeating steps b. through e. for hanging said testing string from said hanging means with said sealing means sealingly engaged with said packer;

k. increasing the well annulus pressure to operate annulus pressure responsive tools in said testing string; and

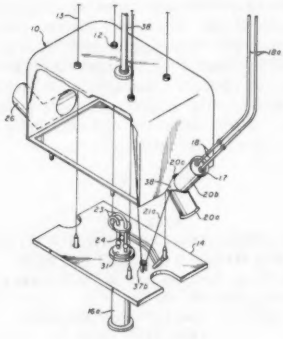
l. maintaining said well annulus pressure increase a sufficient length of time to sealingly block access to said check valve means by said blocking means responsive to the elevated well annulus pressure.

4,258,794

UNDERWATER COMPLETION HABITAT

Phillip S. Sizer; Joseph L. Pearce, both of Dallas, Tex., and Sanford R. Dowden, Slidell, La., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed May 14, 1979, Ser. No. 38,541
Int. Cl.[3] E21B *43/013*
U.S. Cl. 166—356 **6 Claims**



1. An underwater well completion system comprising:

an independently transportable chamber, having a lower open section, lowerable from the surface and adapted to rest upon an underwater well structure;

means for securing said chamber to said well structure in non-sealing relation;

means on said chamber to communicate with the surface for evacuating sea water from the inside of said chamber;

said chamber being constructed of materials which will withstand impinging forces of underwater currents and a pressure differential equal to the height of the chamber times the hydrostatic pressure gradient of ocean water,

a pivotally mounted housing on said chamber for receiving a flow line terminal,

a housing support on said chamber to support and guide the housing,

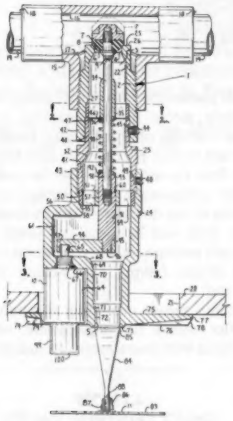
an opening in said chamber associated with said housing support to receive said housing upon its pivoting to a position to rest on said housing support.

4,258,795

ON-OFF SPRINKLER HEAD HAVING AN OFFSET DRIVE MOTOR

Arne H. Hansen, Doylestown, Pa., assignor to Central Sprinkler Corporation, Landdale, Pa.

Filed Mar. 8, 1979, Ser. No. 18,680
Int. Cl.³ A62C *37/06*
U.S. Cl. 169—19 **1 Claim**



1. An on-off sprinkler head for fire extinguishing systems, comprising:

(a) a housing having a central cavity with an inlet aperture and a discharge orifice disposed at opposing ends of said central cavity in an aligned orientation; said discharge orifice being unobstructed and including upstream and downstream sides respectively;

(b) a reciprocating valve mounted axially within said central cavity and selectively controlling the flow of fire extinguishing fluid therethrough; said valve including an axially oriented valve head and mating valve seat, and an axially extending valve stem having one end thereof spaced apart from said discharge orifice on the upstream side thereof, such that said discharge orifice is unobstructed;

(c) a temperature responsive, on-off drive motor connected with the other end of said valve stem and reciprocating the valve head with respect to the valve seat in response to selected temperature changes; said drive motor being mounted in said housing in a position axially off set from said aligned inlet aperture and discharge orifice, whereby during a discharge condition, the fire extinguishing fluid flows substantially unimpeded through said central cavity, and a solid, uninterrupted stream of said fluid is emitted from said discharge orifice;

(d) a deflector spaced apart and connected with said housing at the downstream side of said discharge orifice for deflecting the stream of fluid flowing therefrom and dispersing the fluid into a spray; and

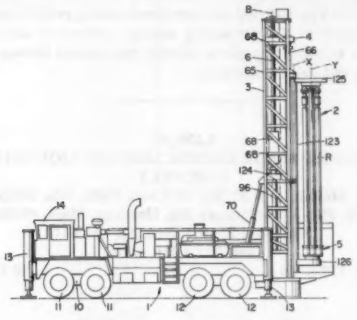
(e) an off set arm connecting said drive motor with said valve stem.

4,258,796

EARTH DRILLING APPARATUS

Frederick G. Horning; John M. Pozniko, both of Salem, and Karl H. Welch, Salineville, all of Ohio, assignors to The Salem Tool Company, Salem, Ohio

Filed Jul. 31, 1978, Ser. No. 929,727
Int. Cl.³ E21B *7/02, 19/02*
U.S. Cl. 175—52 **25 Claims**



1. Apparatus for drilling holes downwardly into the earth comprising a wheeled vehicle having a frame; a drilling mast mounted on said frame for pivotal movement, between an upright drilling position and lateral position, about a first axis fixed with respect to said vehicle frame; a driving bar extending longitudinally of and supported by said mast for rotation about a second axis fixed relative to said mast; driving head means on said mast for rotating a drill rod when said mast is in said upright position, said driving head means being supported on said mast for movement upwardly and downwardly thereof when said mast is in said upright position, said driving head means comprising a rotatable spindle member adapted to rotate a drill rod and to be connected to and disconnected from a drill rod, and means slidably but non-rotatably engaging said driving bar means to positively rotate said spindle member from said driving bar; power means carried by said vehicle frame and adapted to drive a drive shaft rotatably mounted on said frame for rotation about a third axis fixed with respect to said frame and extending transversely toward said mast when it is in its upright drilling position; and disconnectible driving means between said drive shaft on said vehicle frame and said drive bar on said mast, said driving means comprising a driving member having a free end and rigidly connected at its other end to said drive shaft and a driven member having a free end and rotatably mounted on said mast for rotation about a fourth axis fixed with respect to said mast and located to coincide with said third axis when said driving and driven members are connected in driving engagement, said driven member being connected at its other end for positive rotation to said driving bar, said driving and driven members being adapted to be connected at their free ends in driving engagement with said third and fourth axes coinciding when said mast is in its upright drilling position and to be disconnected when said mast is in its lateral position, said driving and driven members being adapted to automatically connect in driving engagement when said mast is in its upright position and to automatically disconnect when said mast is moved from its upright position, one member of said driving member and said driven member comprising an apertured mating portion having an aperture of polygonal cross section and said other member of said driving member and said driven member comprising a projecting mating portion of polygonal cross section matching that of said aperture and adapted to enter into said apertured mating portion to provide driving engagement between the driving and driven members, the mating portion of one member of said driving member and said driven member being adapted to move axially but non-rotatably relatively to a remainder of

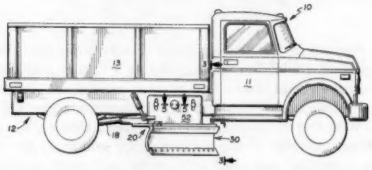
such member and being biased for movement toward the free end of said member but being capable of being moved axially away from the free end of said member when the mating portion of the other member contacts it in non-mating angular relation as said mast is moved to its upright position, said axially movable mating portion being adapted when said mating portions reach mating angular relation on rotation of said driving member to move toward the free end of the member of which it is a part so that said apertured mating portion receives in its aperture the projecting mating portion of said other member to provide positive driving engagement between said driving and driven members.

4,258,797

SCRAPER BLADE UNDERCARRIAGE MOUNTING ASSEMBLY

Neil D. McKenzie, R.R. #2, St. Croix Falls, Wis. 54024, and Leo R. Tift, 371 Whitmore Rd., Hastings, Mich. 49058

Filed Apr. 3, 1978, Ser. No. 892,641
Int. Cl.³ E02F 3/76
U.S. Cl. 172—796 **10 Claims**



1. A scraper blade supporting and positioning assembly for mounting a scraper blade under a vehicle, said vehicle having an undercarriage frame and a longitudinal axis corresponding to the direction of travel of the vehicle, comprising:

a scraper blade;

first mounting means pivotally connectable to said undercarriage frame and when so connected to said frame having a home position which would correspond to the lower edge of the scraper blade being substantially parallel to the plane of the undercarriage frame regardless of the angle between said blade and said longitudinal axis, said first mounting means comprising a pair of rigid, planar members, said planar members being substantially parallel to each other and further comprising axially aligned pivot means for pivotally connecting said planar members to the undercarriage frame such that said planar members would bear against said undercarriage frame under loading of said blade, said pivot means defining a first pivot axis extending through both of said planar members;

means for moving and positioning the first mounting means in either rotational direction from its home position about said first pivot axis;

second mounting means rigidly connected to said first mounting means and pivotally connected to the scraper blade; and

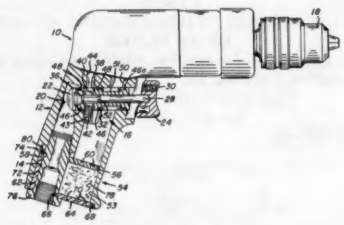
means for moving and positioning the scraper blade about a second pivot axis defined by the pivotal connection between the scraper blade and the second mounting means, said second pivot axis being substantially parallel to a plane perpendicular to the first pivot axis and, when said first mounting means is in its home position, being substantially perpendicular to the plane of the undercarriage frame, whereby pivotal movement of the first mounting means in either rotational direction from its home position causes the second pivot axis to be rotated in a plane substantially perpendicular to the first pivot axis in either direction from an orientation perpendicular to the plane of the undercarriage frame.

4,258,798

AIR PASSAGES FOR PNEUMATIC TOOLS

Gordon C. Campbell, Irmo; Robert H. Alexander, Columbia, both of S.C., and George C. Atwell, Butler, Pa., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Mar. 9, 1979, Ser. No. 19,036
Int. Cl.³ B23B 45/04
U.S. Cl. 173—168 **2 Claims**



1. A portable pneumatic power tool comprising a housing, a rotary pneumatic motor in said housing, a handle portion extending from one side of said housing, passage means for air flow through said handle portion into said housing for providing operating fluid to said motor and for conducting exhaust fluid therefrom, said passage means being a single passage for at least a portion of the distance inwardly from the end of said handle remote from said housing, and insert means disposed within said single passage, said insert means including:

(a) muffler means having an opening extending therethrough; and

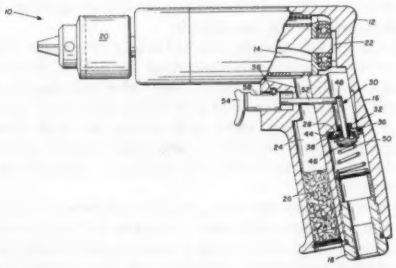
(b) hose adapter means extending through the opening in said muffler means for engagement with said handle means to hold said insert means in said single passage.

4,258,799

INLET CONTROL VALVE

Richard E. Eckman, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 27, 1979, Ser. No. 97,621
Int. Cl.³ B23B 45/04
U.S. Cl. 173—169 **5 Claims**



1. An improved inlet control valve for pneumatic tools or the like that include a hollow tool body containing an air motor, the body including an inlet passageway extending therethrough from a connection with a source of pneumatic pressure to the air motor, and having a surface therein encircling the passageway forming a valve seat, the improved valve comprising:

an annular first valve member movably located in the body and sealingly engageable with the valve seat, said annular valve member having a bore extending therethrough and having an annular seat encircling said bore;

a second valve member movably located in the body and

including a surface engageable with a valve seat on said first valve member to form a fluid-tight seal therewith, said second valve member also including an elongated valve operating portion extending through the bore in said first valve member;

resilient means located in the body and engaging the second valve member for urging said first and second valve members toward their respective seats; and,

a valve operating member slidingly disposed in the body for engaging the elongated valve operating portion of said second valve member, said operating member being movable to a first position wherein the second valve member is tilted out of engagement from the valve seat on said first valve member, opening the bore through said first valve member to fluid flow and being movable to a second position to tilt said first valve member away from the seat on the body opening the valve to permit full flow through the inlet passageway.

4,258,800

HINGED CONDUCTOR CASING FOR DEVIATED DRILLING AND METHOD THEREFOR

James Hipp, New Iberia, La., assignor to Petro-Drive, Inc., Lafayette, La.

Filed May 3, 1979, Ser. No. 35,635
Int. Cl.³ E21B *7/08*
U.S. Cl. 175—61 **11 Claims**

1. In a conductor shoe means for attachment to a conductor pipe to be driven into the earth for initiating deviation of the path of the conductor laterally of the longitudinal center line thereof at a depth is determined by the forces resistive to the continued driving of the conductor pipe comprising:

an upper support means affixed to the distal end of the conductor pipe,

a lower shoe means adapted for movable articulation with respect to the upper support means and,

pivot means affixing the lower movable shoe means to the upper support means to move the lower shoe means relative to the upper support means in response to the resistance forces so as to angularly dispose a surface of the lower shoe means with respect to the axis of the conductor pipe for inducting lateral deviation from the center line.

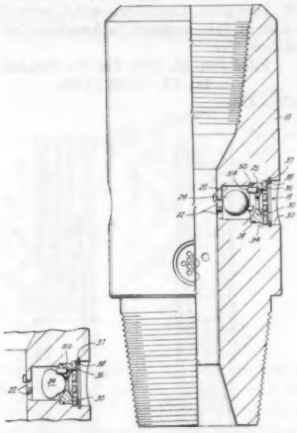
4,258,801

DUMP VALVE FOR USE WITH DOWNHOLE MOTOR

John B. Poston, Houston, Tex., assignor to Eastman Whipstock, Inc., Houston, Tex.

Filed Jun. 14, 1979, Ser. No. 47,560
Int. Cl.³ E21B *4/02, 21/10;* F16K *15/04, 15/14*
U.S. Cl. 175—65 **7 Claims**

1. A dump valve for use with a downhole motor comprising a tubular member for connecting into a drill string above a downhole motor, said tubular member having an opening extending laterally through the side wall thereof, a valve seat mounted in the opening through which fluid can flow into and out of the tubular member, a deformable valve member of resilient material positioned in the opening for movement toward the valve seat by fluid flowing out of the tubular member, and means for holding the valve member spaced from the valve seat to allow fluid to flow out of the tubular member



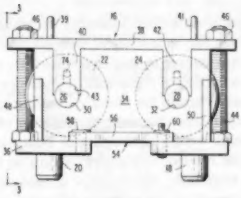
until the differential pressure across the valve member forces the valve member to deform sufficiently to move past the holding means into engagement with the valve seat.

4,258,802

DOWNHOLE DRILLING SYSTEM

Homan C. Tullos, 100 Meadow La., Lafayette, La. 70502, and Dewey W. Woods, Rte. 6, Box 194, Livingston, Tex. 77351

Filed Feb. 5, 1979, Ser. No. 9,149
Int. Cl.³ E21B *4/00*
U.S. Cl. 175—103 **16 Claims**



1. A kelly bushing for use with a drill string during a downhole drilling operation where a downhole drilling motor is mounted on the end of the drill string in the hole being drilled and the drill string has a kelly mounted on its upper end, said bushing comprising:

a base member having an aperture through which the kelly can pass;

support means mounted on said base member, said support means enabling the kelly to move in a forward direction into the hole while preventing movement of the kelly in a direction transverse to such forward direction, said support means including locking means for preventing rotation of the drill string so as to lock in the torque created in the drill string by the downhole motor;

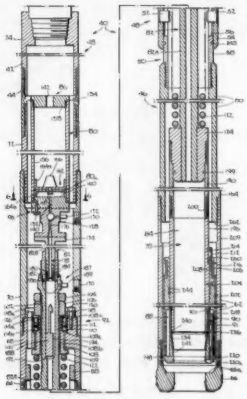
and guide means including an opening in said base member and extending from the outer edge of said base member to said aperture in said base member, said opening in said base member enabling an electrical wire to be fed into the hole for connection to an electrical device mounted in the location of the end of the drill string progressing into the hole with such wire being fed without interfering with the passage of the kelly through said support means.

4,258,803

CORE BARREL FOR OBTAINING AND RETRIEVING SUBTERRANEAN FORMATION SAMPLES

Charles M. Thompson, Carrollton, and Charles T. Thompson, Dallas, both of Tex., assignors to American Coldset Corporation, Addison, Tex.

Filed Jun. 21, 1978, Ser. No. 916,466
Int. Cl.[3] E21B *25/06*
U.S. Cl. 175—233 **26 Claims**



1. Pressure core barrel apparatus adapted to be connected to a drill string for retrieving a core sample including solids and fluids cored from a bore hole extending into a subterranean formation comprising:

a first chamber having an opening for receiving the sample;

means for selectively sealing the opening of the first chamber after a core sample has been received in the first chamber;

a second expansible closed chamber disposed adjacent the first chamber for receiving in the interior thereof fluids from the core sample in said first chamber, said expansible chamber including a rigid-walled cylinder and movable sealing means therein for movably sealing said cylinder to seal said expansible chamber, the exterior of said movable sealing means within said cylinder being in communication with the interior of the drill string so that when disposed in a bore hole, the exterior of said movable sealing means is exposed to the ambient pressure condition of the bore hole adjacent thereto;

means for selectively connecting said expansible chamber with said first chamber to enable fluids from the first chamber to enter the expansible chamber, said expansible chamber when communicated with said first chamber being adapted to increase in volume as the core barrel apparatus with the core sample therein is brought to the surface from the subterranean formation; and

means for remotely actuating the connecting means to connect the expansible chamber to the first chamber.

4,258,804

RELEASABLE DRILL STRING STABILIZER

Vernon T. Richey, and Edward L. Moses, Jr., both of 1775 St. James Pl. Suite 170, Houston, Tex. 77056

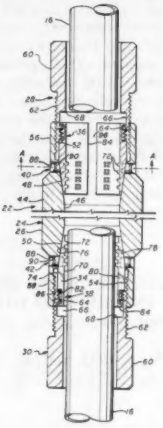
Filed May 4, 1979, Ser. No. 35,947
Int. Cl.[3] E21B *17/10*; F16C *1/26*
U.S. Cl. 175—325 **8 Claims**

3. A stabilizer for positioning on a drill string including:

(a) a stabilizer body having an interior surface and an exterior surface including outwardly extending stabilizer blades;

(b) engaging means mounted on the interior surface of the stabilizer body for tightly engaging the drill string;

(c) urging means mounted with said body for continuously urging said engaging means to tightly engage the drill string;



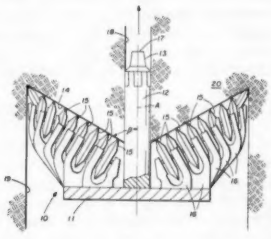
(d) rotation stop means extending through said body to engaging means to prevent rotational movement of said engaging means relative to said body.

4,258,805

LOW CUTTER LOAD RAISE HEAD

William C. Saxman, Irving, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 27, 1979, Ser. No. 69,964
Int. Cl.[3] E21B *10/28*
U.S. Cl. 175—344 **3 Claims**



1. A raise bit for enlarging a pre-drilled pilot hole into a larger diameter hole for disintegrating the earth formations surrounding the pilot hole, comprising:

a central drive stem for projecting into the pilot hole and guiding the bit;

a cutterhead attached to the lower end of the stem and projecting generally transverse to the axis of rotation of the stem and supporting thereon a plurality of rolling cutters, each having an annular earth engaging surface for contacting and disintegrating the earth through rolling contact between said surface and said earth above said cutterhead, said plurality of rollers defining an earth contacting profile which extends upwardly outwardly from said pilot hole over substantially the radius of the larger diameter hole formed by said bit and whereby any line connecting any two points of said earth contacting profile

intersects the axis of said stem at an included angle substantially less than 90°.

4,258,806

ROTARY DRILL BIT WITH ROTARY CUTTERS

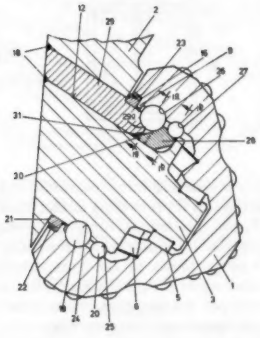
Heinrich Kunkel; Armin Olschewski, both of Schweinfurt; Manfred Brandenstein, Aschfeld; Lothar Walter, Schweinfurt, and Horst M. Ernst, Eltingshausen, all of Fed. Rep. of Germany, assignors to Sandvik AB, Sandviken and Aktiebolaget SKF, Gothenburg, both of, Sweden

Filed May 29, 1979, Ser. No. 42,925

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1978, 2841971

Int. Cl.³ E21B *10/20, 10/22*

U.S. Cl. 175—370 **4 Claims**



1. In a rotary drill bit having a drill bit body and at least one trunnion projecting from the drill bit body and a rotary cutter supported on at least one pair of radial rolling bearings on the trunnion, means for guiding the rolling elements of said bearings on at least one axial end facing the drill bit body in an outer bearing race groove incorporated in the bore of the rotary cutter, means defining an inner bearing race groove on the trunnion for the rolling elements of said radial rolling bearing and means defining at least one filling opening arranged in the drill bit body to provide a common filling means for each radial rolling bearing, said filling opening extending essentially axially parallel to the axis of the trunnion in the non-loaded zone of the trunnion having one terminal end adjacent the inner bearing race groove and at least one filler piece for sealing the opening.

4,258,807

METHOD FOR MAKING ROCK BITS

John F. Fischer, Los Alamitos, and Elton R. Foor, Garden Grove, both of Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Division of Ser. No. 818,144, Jul. 22, 1977, Pat. No. 4,156,123. This application Oct. 23, 1978, Ser. No. 953,556

Int. Cl.³ E21B *10/50*

U.S. Cl. 175—375 **6 Claims**

1. A three-cone rock bit comprising:

a steel rock bit body having a hollow, generally cylindrical shank portion at one end;

means on the shank portion for connection of the rock bit to a drill string;

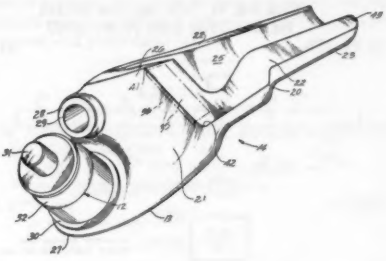
three depending legs at the other end of the bit body;

a rock-boring cutter cone mounted on each leg;

a dome portion of the bit body between the shank portion and legs, the dome portion forming a web transverse to the axis of the rock bit between the hollow shank portion and the exterior of the rock bit;

a plurality of weld beads along the shank portion of the bit body in each of three locations spaced 120° apart around the shank portion, at least some of such weld beads having a composition substantially the same as the composition of the steel of the bit body; and

a weld bead in each of three sectors in the dome portion of the bit body, the three weld beads meeting in a Y-shaped



intersection on the axis of the rock bit and extending generally radially therefrom, each of said weld beads being a continuation of a weld bead on the shank portion and having a different alloy content than the steel of the bit body.

4,258,808

ROCK DRILL

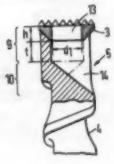
Wolfgang Peetz, Blitzenreute, and Siegfried Klaissle, Unterankenreute, both of Fed. Rep. of Germany, assignors to Hawera Probst GmbH & Co., Ravensburg, Fed. Rep. of Germany

Filed Mar. 1, 1979, Ser. No. 16,131

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1978, 2808885

Int. Cl.³ E21B *10/44*

U.S. Cl. 175—394 **19 Claims**



1. A drill for rotary blow drilling into dense material, particularly rock and reinforced concrete, said drill comprising in combination:

a shaft portion having at least one helical groove for removal of drill dust generated during drilling, said at least one groove being helically disposed about the outer surface of said shaft portion;

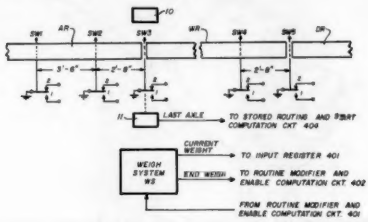
an annular cutting head connected to said shaft portion, said cutting head including a hard metal cutting ring with a bore of predetermined diameter; and

drill-dust-removal channel means in said shaft portion for communicating between said annular cutting head near said hard metal cutting ring and said at least one helical groove, said channel means having an open width at least equal to diameter of the bore in said hard metal cutting ring.

4,258,809
APPARATUS AND METHODS FOR WEIGHING RAILROAD CARS COUPLED TOGETHER AND IN MOTION

William F. Jones, Glenview, Ill., and assignors to Mangood Corporation, Chicago, Ill.

Filed Jul. 31, 1974, Ser. No. 493,218
Int. Cl.[3] G01G 9/00, 19/40, 21/22
U.S. Cl. 177—1 51 Claims



1. A method of measuring the loading of a series of axle configurations of a vehicle comprising the steps of:

moving the vehicle onto a weigh platform having a length to admit said series of axle configurations,

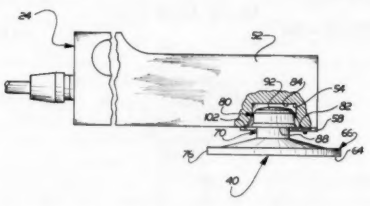
recording the total weight on the platform at the time of entry thereon or exit therefrom of each axle configuration,

and subtracting from the total weight as just aforesaid the total weight on the platform at the time of entry thereon or exit therefrom of the next preceding axle configuration.

4,258,810
WEIGHING APPARATUS

William C. Susor, Westerville, Ohio, assignor to Masstron Scale, Inc., Columbus, Ohio

Filed May 25, 1979, Ser. No. 42,352
Int. Cl.[3] G01G 21/02
U.S. Cl. 177—128 5 Claims

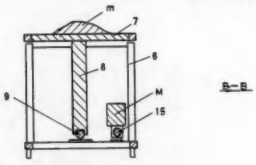


1. An apparatus for use in weighing a load, said apparatus comprising a load cell having a downwardly facing recess, force transmitting means projecting downwardly from said load cell for transmitting force between said load cell and a support surface, said force transmitting means including a force transmitting member having a relatively large base with a lower surface adapted to slidably engage the support surface to enable said force transmitting member to move along the support surface upon movement of said load cell in a direction which is generally parallel to the support surface, said force transmitting member having a mounting section extending upwardly from said base into the recess in said load cell, said mounting section having an arcuate end surface which abuttingly engages a bottom surface of said recess to facilitate tilting movement between said load cell and said force transmitting member, retainer means connected with said load cell and abuttingly engaging at least a portion of said mounting section in said recess when said lower surface of said base is spaced from the support surface, and being spaced from said mounting section when said lower surface of said base engages the support surface.

4,258,811
ELECTRIC MASS AND FORCE MEASURING APPARATUS

Hans A. Franzon; Jan K. Gustafsson, and Per-Erik Nilsson, all of Karlskoga, Sweden, assignors to AB Bofors, Bofors, Sweden

Filed Oct. 19, 1976, Ser. No. 733,821
Claims priority, application Switzerland, Sept. 29, 1975, 12078/75
Int. Cl.[2] G01G 19/00, 21/24
U.S. Cl. 177—200 2 Claims



1. In an electric mass and force measuring apparatus having a first force transducer for providing an electrical output signal proportional to the gravitational force of the mass to be determined, a second force transducer for providing an electrical output signal proportional to the gravitational force of a known mass, and signal processing means for calculating and providing an output manifestation representative of the unknown mass, the improvement comprising:

means for each of said force transducers to cause the associated transducer to respond only to a force component acting in a predetermined direction;

means including a common frame for fixedly supporting said force transducers in a manner to ensure that said predetermined directions of said transducers are parallel to each other;

each of said force transducers being of the beam type and including a first beam which is freely deflectable at one end thereof and rigidly secured to a second beam, said second beam extending freely to the side of said first beam and being shorter than said first beam;

a weighing platform for supporting the unknown mass;

said first beam of said first force transducer being fixedly attached to said frame, said second beam of said first force transducer being connected via a shaft to said weighing platform.

4,258,812
SELF-CONTAINED PORTABLE ELECTRICALLY SENSED BATHROOM SCALE

John E. Pfeiffer, c/o Electronic Design Lab, 3 Great Pasture Rd., Redding, Conn. 06896

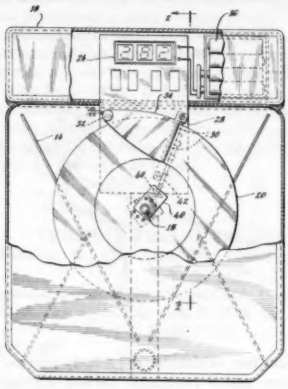
Filed Jan. 2, 1979, Ser. No. 255
Int. Cl.[3] G01G 3/14
U.S. Cl. 177—210 R 10 Claims

1. In a bathroom scale having a platform on which a person can stand to be weighed by a weighing mechanism which indicates weight within a range with rotation of an output shaft in proportion to the person's weight, an optical shaft encoder used to sense ouput shaft rotation and a numerical illuminated display controlled with signals of a predetermined binary decimal code to visually indicate the sensed weight, the improvement comprising

an optical encoder disc mounted on the output shaft for rotation thereby about an axis, said encoder disc bearing concentric channels of circumferentially successive optical binary digit codings, with cncentric channels being coded to represent at least three optically detectable bi-

nary coded decimal digits as detected along a radial direction from said axis;

with each channel having circumferentially distributed optical transitions between opposite binary codings, said optical binary codings for all of said channels being arranged to provide no more than a single optical transition between circumferentially successive binary coded decimal digits within the weight indicating range of the bathroom scale.



4,258,813

APPARATUS FOR AUTOMATIC GUIDANCE OF A TRACKLESS VEHICLE

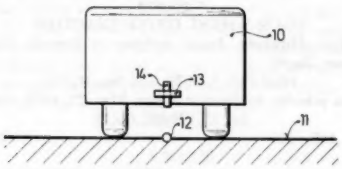
Erich Rubel, Ludwigsburg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 20, 1978, Ser. No. 962,393

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1977, 2752027

Int. Cl.³ B62D *1/24*

U.S. Cl. 180—168 **10 Claims**



1. An apparatus for guiding a trackless vehicle along a path defined by a guide cable disposed in the road surfce, said guide cable carrying an alternating current, thereby generating an alternating electromagnetic field in the space surrounding the guide cable, said apparatus having detector means for detecting the direction and magnitude of the alternating magnetic field, said detector means including a first detecting coil (**13**) disposed substantially horizontally on said vehicle and a second detecting coil (**14**) disposed substantially perpendicular to said first detecting coil, for generating from the alternating magnetic field first and second alternating signals, respectively,

and comprising, in accordance with the invention,

phase shifting means (**24**) connected to the second detecting coil (**14**) and receiving the second signal to shift the phase of said second signal and thereby form a third signal;

and computer means (**21**, **22**; **25**) connected to the first coil for receiving said first signal and to the phase shifting means (**24**) for receiving the third signal,

said computer means including

clock means (**25t**; **31**, **25t'**) and

comparator means (**21**, **22**) comparing the relative phase of the first signal representative of the phase of the alternating magnetic field with the phase of the third signal,

said computer deriving a digital error signal as a function of the phase difference between the first and third signals to thereby obtain a control signal to steer said vehicle in the sense of reducing the phase difference between the first and third signals, resulting in guiding said vehicle (**10**) in a path over said guide cable (**12**).

4,258,814

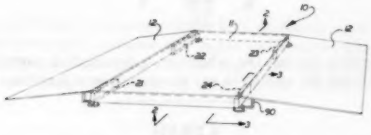
WEIGHING APPARATUS

Benny N. Dillon, Worthington, Ohio, assignor to Masstron Scale, Inc., Columbus, Ohio

Filed Jun. 25, 1979, Ser. No. 51,841

Int. Cl.³ G01G *21/00, 3/14*

U.S. Cl. 177—126 **10 Claims**



1. Apparatus for weighing a load comprising a horizontally extending platform for receiving the load, said platform having a plurality of corners and vertically downwardly extending frame parts projecting from said platform at least adjacent said corners, shear beam load cells for supporting said platform, one and only one shear beam load cell being located at each of said plurality of corners of said platform and applying a load resisting force thereto, means for securing each said shear beam load cell at one end to a vertically extending frame part and means at the other end of each said shear beam load cell for supporting said load cell on a support surface, said means for securing each said shear beam load cell at said one end comprising at least one fastener which extends transverse to the direction of application of the load to the load cell and transverse to the direction of the resisting force applied to the load cell.

4,258,815

AMBULATOR DRIVE MECHANISM

John P. Wier, and Robert A. Garrett, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 29, 1979, Ser. No. 7,285

Int. Cl.³ B62D *11/04*

U.S. Cl. 180—6.48 **3 Claims**

1. A maneuverable, self-propelled land vehicle comprising:

a rectangular chassis;

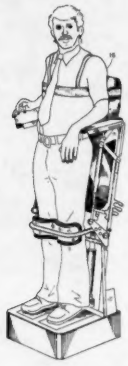
a plurality of identical wheels for supporting and moving said chassis, each wheel mounted at a respective corner of said chassis, and each wheel having a fixed axis of rotation, each axis inclined in such a manner that all of said axes intersect below said chassis at a point on its vertical centerline, whereby the vehicle is provided with a minimum center of gravity;

each wheel comprising a plurality of rollers mounted in spaced relation around its periphery, each roller having an axis of rotation lying in a common plane perpendicular to the axis of rotation of its respective wheel;

said plane containing the roller axes being slightly inclined with respect to a surface over which the vehicle is to be propelled so that only a limited number of the rollers on each wheel engage the surface at any given time during wheel rotation;

an independently reversible drive means for each wheel,

wherein each wheel can be rotated in either a clockwise or counterclockwise direction;



whereby driving the wheels in a preselected pattern can propel the vehicle in any movement in at least two axes.

4,258,816

INSTALLATION FOR THE ACCOMMODATION OF AN INTERCHANGEABLE ENERGY-STORAGE DEVICE IN A MOTOR VEHICLE

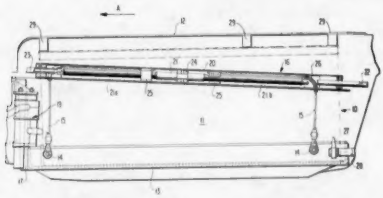
Rainer Klink, Kernen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Dec. 28, 1978, Ser. No. 973,817

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1977, 2758534

Int. Cl.³ B62D *25/00*; B60R *16/04*

U.S. Cl. 180—68.5 **29 Claims**



1. An installation for insertion and removal of an energy-storage means in a motor vehicle, the motor vehicle including an area for accommodating th energy-storage means, characterized in that means are provided for conveying and guiding the energy-storage means into and out of the accommodating area, said conveying and guiding means including a lifting and lowering means utilizing a plurality of lifting cable means and a pair of threaded spindle means for lifting and lowering said energy-storage means, said threaded spindle means being adapted to effect an uneven movement of said plurality of lifting cable means so as to compensate for the tilting of said motor vehicle during an insertion or removal of said energy-storage means, whereby said energy-storage means is maintained in a substantially level position during the tilting of said motor vehicle, frame means are provided for supporting the energy-storage means, said supporting frame means being operatively connected with said lifting and lowering means of said conveying and guiding means so as to be movable thereby into and out of the accommodating area, and in that means are provided for automatically connecting or disconnecting the energy-storage means from a connecting means provided at the vehicle upon an insertion and removal of the energy-storage means from the accommodating area.

4,258,817

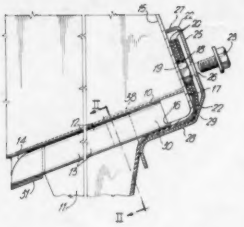
METHOD OF INSTALLING, AND RETAINING, SKIRT SEGMENTS ON AN AIR CUSHION VEHICLE, AND MEANS THEREFORE

Rowland D. Hunt, 1043 75th Ave., SW., Calgary, Alberta, Canada

Filed Jul. 21, 1978, Ser. No. 926,838

Int. Cl.³ B60V *1/16*

U.S. Cl. 180—127 **7 Claims**



1. An air cushion vehicle having a body portion including a bottom surface and a peripheral surface extending upward from the bottom surface, and means extending for at least part of the peripheral surface for containing a cushion of pressurized gas beneath the vehicle, and socket members on said bottom surface and positioned inwardly from said peripheral surface, said means for containing a cushion of pressurized gas including a flexible skirt comprising a plurality of flexible skirt segments, each segment having two substantially parallel sides and an outer periphery, a rigid elongate member at the top edge of each of said sides and each elongate member having inner and outer ends, each of said inner ends situated on one of said socket members on the bottom surface of the vehicle, and a plurality of clamping members, said clamping members engaging said outer ends of the elongate members and extending over said peripheral surface of the vehicle body to clamp the outer peripheries of the skirt segments against the vehicle body.

4,258,818

FOUR-WHEEL DRIVE TRACTOR

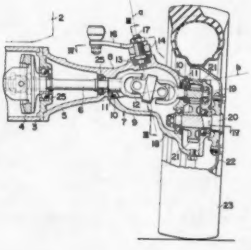
Hideo Uzu, Hirakata, Japan, assignor to Toyosha Co., Ltd., Kadoma, Japan

Filed Feb. 9, 1979, Ser. No. 10,976

Claims priority, application Japan, Mar. 22, 1978, 53-32712

Int. Cl.³ B60K *17/30*

U.S. Cl. 180—233 **8 Claims**



1. A four-wheel drive tractor comprising: front wheels, means for supplying driving power to said front wheels, a driving shaft means connecting said driving power supplying means with each of said front wheels, a shaft case enclosing each front wheel driving shaft means, a kingpin for each shaft case, each front wheel driving shaft means having a universal

joint therein connected to the corresponding front wheel and intersecting an extension of the axis of said kingpin, a universal joint housing enclosing each universal joint and being divided along a plane perpendicular to the axis of said kingpin into upper and lower housing parts to define engaging mating surfaces for permitting relative rotation of said universal joint housing parts around the axis of said kingpin, each upper universal joint housing part being fixed to the corresponding shaft housing and each lower universal joint housing part carrying a corresponding front wheel, and steering means connected to said lower universal joint housing parts for rotating said lower universal joint housing parts relative to the upper universal joint housing parts for turning said wheels around the axes of said kingpins for steering the tractor.

4,258,819

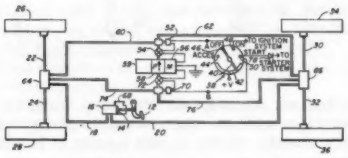
VEHICULAR BRAKE SYSTEM

Maurice Baptiste, Sr., 129 County Rd., East Freetown, Mass. 02717

Continuation-in-part of Ser. No. 861,884, Dec. 19, 1977, abandoned. This application Jan. 8, 1979, Ser. No. 1,977

Int. Cl.³ B60K *27/00*

U.S. Cl. 180—287 **5 Claims**



1. An automatic vehicle brake system for a vehicle having a key actuated on/off switch for controlling the vehicle engine and having hydraulically actuated brakes, the system comprising:

an auxiliary hydraulic pump for pumping hydraulic fluid to the hydraulically actuated brakes;

activating means responsive to the on/off switch on the off position for activating the auxiliary hydraulic pump to apply hydraulic pressure to the brakes; and

release means responsive to the on/off switch in a position other than the off position to activate the auxiliary hydraulic pump to withdraw pressure from the brakes, the hydraulic pump being deactivated after withdrawing the hydraulic pressure from the brakes in response to a low pressure level.

4,258,820

SUB-FRAME SUPPORTING APPARATUS FOR AN AUTOMOBILE

Tatsuhiko Miura, Fujimi; Takefumi Toyoshima, Asaka; Kazuo Kikuchi, Sakado, and Akio Masaki, Ooi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

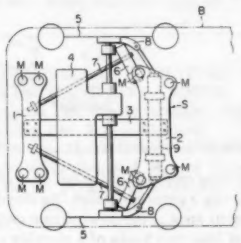
Filed Aug. 27, 1979, Ser. No. 70,336

Claims priority, application Japan, Sep. 4, 1978, 53-121295[U]

Int. Cl.³ B62D *27/04*

U.S. Cl. 180—295 **11 Claims**

1. Support apparatus for supporting a sub-frame of an automobile on a main frame of the automobile, the sub-frame having a support hole in which the support apparatus is engaged to support the sub-frame on the main frame, said support apparatus comprising upper and lower holding plates, the upper plate being interposed between the main frame and the upper surface of the sub-frame, the lower plate engaging the sub-frame at the lower surface thereof, a spacer pipe secured to the lower plate and extending towards the upper plate, fastener means extending through said pipe for securing the holding plates to the main frame, an elastic support member secured to the outer periphery of said pipe and engaging said sub-frame in the support hole therein, a damper rib extending from the lower surface of the upper holding plate, the sub-frame having an inwardly directed flange at said support hole, said damper rib and elastic support member respectively engaging the inwardly directed flange from above and below, said elastic support member having upper and lower surfaces with gaps



formed thereat to take-up relative vertical displacement of said main frame and sub-frame, said upper and lower holding plates forming respective gaps with the upper and lower surfaces of the sub-frame also to take-up said relative vertical displacement.

4,258,821

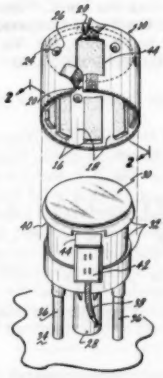
SOUND-ABSORBENT BLOWER COVER

Gary R. Wendt, 2 W. Main St., Ventura, Calif. 93001, and Maurice P. Walsh, 1512 Lincoln La., Newport Beach, Calif. 92663

Filed Feb. 7, 1979, Ser. No. 10,137

Int. Cl.³ F01N *1/24;* **H02K** *5/24*

U.S. Cl. 181—202 **12 Claims**



1. A flexible sound-absorbent cover for installation on a blower of the type having a rigid body including an air intake aperture, a motor and an air impellor, the blower being connected to an outlet duct, said flexible cover comprising:

an outer skin of a pliable material of such a shape as to surround the blower, and to conform generally to the shape of the blower but oversize so that a space exists between the blower and said outer skin; and,

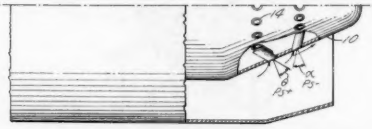
liner material of a sound-absorbent flexible porous substance affixed to said outer skin and so disposed in the space between the blower and said outer skin that some of the air taken in by the blower passes through said liner material before reaching the air intake, whereby said liner material filters some of the air taken in, said liner material occupying an appreciable portion of the space between the blower and said outer skin.

4,258,822

MUFFLER PLUG FOR GAS TURBINE POWER PLANT

Richard A. Streib, Ellington, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jul. 27, 1979, Ser. No. 61,340
Int. Cl.[3] F01N 1/00; F02K 1/00; G10K 11/04
U.S. Cl. 181—213 1 Claim



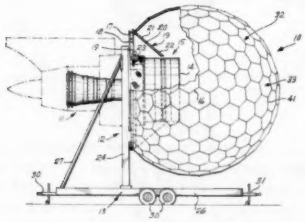
1. A muffler plug disposed in the tail pipe of a turbine type power plant having a generally bullet like shaped hollow body member having its apex at the downstream end relative to the grazing flow, at least two banks of a plurality of circumferentially spaced openings in said outer circumference of said body for leading air into said hollow body and tubes in said openings disposed angularly with respect to the grazing flow, and the tubes in the adjacent banks being at angles so that the total pressure admitted internally of said hollow body from one bank counteracts the total pressure admitted from the adjacent banks so that the flow in said hollow body is substantially quiescent so that continuous flow into and out of adjacent banks is substantially eliminated.

4,258,823

INFLOW TURBULENCE CONTROL STRUCTURE

Ulrich W. Ganz, Kirkland, and Paul C. Topness, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jan. 2, 1979, Ser. No. 65
Int. Cl.[3] F02K 11/00
U.S. Cl. 181—214 12 Claims



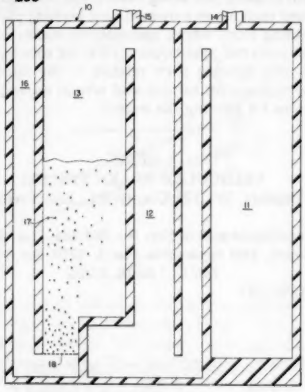
1. In ground test apparatus for an aircraft jet engine, a device for attenuating steady and unsteady distortions in air entering the intake of an engine mounted therein comprising a substantially spherical enclosure of a diameter approximately three times the diameter of said engine air intake, the wall structure of said spherical enclosure comprising air-traversible flow straightening means, said enclosure having a substantially ciruclar side wall opening of a diameter larger than the engine exterior and was not materially larger than approximately the radius of said spherical enclosure, mounting means maintaining said engine approximately centered in said opening with its nozzle end outside said enclosure and its intake end extending along a horizontal axis and projecting radially into said enclosure by a distance that places said engine intake at a generally central location within said enclosure, and baffle means of annular form substantially bridging between said enclosure and said engine at a location back of said engine intake.

4,258,824

SOUND MUFFLING BAFFLE FOR DRAINAGE DEVICE

Leonard D. Kurtz, Woodmere, and Robert E. Bidwell, Melville, both of N.Y., assignors to BioResearch Inc., Farmingdale, N.Y.

Filed Jan. 22, 1979, Ser. No. 5,512
Int. Cl.[3] A61M 1/00; G10K 11/00
U.S. Cl. 181—233 1 Claim



1. In a drainage device for draining fluids through a thoracotomy tube from a pleural cavity, said drainage device having a collection chamber having an inlet opening to be placed in fluid communication with a cavity to be drained, a seal chamber having first and second columns in communication with each other at the lower ends thereof and adapted to receive a body of liquid in the lower portion of said first and second seal chamber columns, the upper end of the first seal chamber column being in fluid communication with said collection chamber, the upper end of said second seal chamber column being in fluid communication with a vacuum source, and a manometer chamber comprising first and second columns in fluid communication with each other at the lower ends thereof and adapted to receive a body of liquid in the lower portion of said first and second manometer chamber columns, the upper portion of said first manometer chamber column being in fluid communication with said vacuum source and the upper portion of said second manometer chamber being open to atmosphere, the improvement including means comprising a thin baffle plate extending horizontally across the lower end portion of the first manometer chamber column, said baffle plate having approximately 150 apertures therein of approximately one millimeter in diameter, during operation of the drainage device said baffle plate forming an air plenum beneath the plate and preventing the formation of large noise producing bubbles in the water above the plate.

4,258,825

POWERED MANLIFT CART

Pat L. Collins, 6619 Wo. Windermere St., Littleton, Colo. 80120

Filed May 18, 1978, Ser. No. 906,960
Int. Cl.[3] E04G 1/22, 1/24
U.S. Cl. 182—14 28 Claims

1. A powered manlift cart comprising:

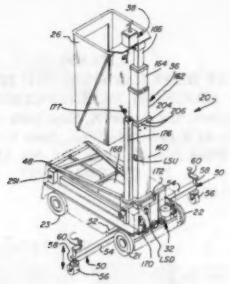
a frame with steerable wheels rotatably mounted thereto for supporting said frame for movement, there being a first pair of steerable wheels at one end of said frame and a second pair of steerable wheels at the opposite end of said frame, said first and second pairs being turnable independently of one another;

powered wheel drive means for rotating at least a pair of said wheels for moving said frame;

powered steering drive means for turning said first pair of

steerable wheels in either direction and said second pair of steerable wheels in either direction independently of the turning of said first pair of wheels for steering said cart;

a mast including a generally vertically disposed stationary mast section carried by said frame and a first movable mast section slidable within said stationary mast section and supported for vertical movement relative to said



stationary mast section, said movable mast section having a support for raising and supporting an operator at selected elevated heights;

powered mast drive means for extending and retracting said movable mast section; and

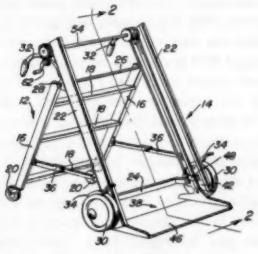
control means operable by the operator for selectively controlling said wheel drive means, said steering drive means and said mast drive means.

4,258,826

COMBINATION STEPLADDER AND LOAD LIFTING APPARATUS

Douglas J. Murray, 9450 SW. Lehman St., Portland, Oreg. 97223

Filed Mar. 28, 1979, Ser. No. 24,795
Int. Cl.³ B62B *1/20*; E06C *1/397, 7/16*
U.S. Cl. 182—20 **7 Claims**



1. A combination stepladder and load lifting apparatus comprising in combination:

a ladder portion having side rails and steps disposed between the side rails;

a first pair of wheels attached to the bottom of said ladder portion;

a load lifting portion pivotally attached to the top of said ladder portion, said lifting portion including longitudinal side members;

a second set of wheels attached at the bottom of said side members; and

load lifting means attached to said lifting portion and mounted between said side members, said load lifting means including a first lifting platform and a second lifting platform hingedly attached for disposition in a first surmounting position over said first platform and a second position rising upwardly from said first platform to form a back for said first platform, and,

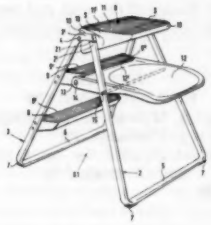
a connection cable attached to said first and second lifting platforms at one end and a cable spool attached to the opposite end of said cable, a hand crank connected to said cable spool for rotating said cable spool to draw said lifting platforms along said side members.

4,258,827

MULTI-PURPOSE PIECE OF FURNITURE FOR USE AS CHAIR AND STEP-LADDER

Odo Klose, Wuppertal, Fed. Rep. of Germany, assignor to Bremshey AG, Solingen, Fed. Rep. of Germany

Filed Apr. 27, 1979, Ser. No. 34,148
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1978, 2832280; Jul. 22, 1978, 2832370; Jul. 24, 1978, 2832423
Int. Cl.³ A47C *13/00*
U.S. Cl. 182—33.3 **13 Claims**



1. An improved multi-purpose piece of furniture usable as a chair and as a step-ladder, having a base-frame and a backrest pivotally mounted on said base-frame and adapted to be folded from a back-rest position to a horizontal step-ladder position and vice versa for respective use as the top rung of the step-ladder when in the horizontal position and as the back-rest of a chair when in the back-rest position, the improvement comprising

a pair of pivotally connected frame members forming said base frame,

a plurality of rungs in addition to said top rung operatively mounted in one of said frame members, each rung having a front edge and a rear edge, the uppermost rung of said plurality of rungs being pivotally mounted on one of said members and being adapted to alternately form a back-rest and step-ladder rung and also having a front edge and a rear edge when in the horizontal position, and also having an upper and lower edge when in the back-rest position; and imaginary vertical plane passing through said lower edge of said back-rest, when it is in the horizontal position, lies in front of the front-edge of the lower-most rung.

4,258,828

FOLDING MAST LADDER

Ronald K. Evans, 834 W. Montecito Way, San Diego, Calif. 92103

Filed Aug. 22, 1979, Ser. No. 68,706
Int. Cl.³ B63B *29/20*
U.S. Cl. 182—95 **7 Claims**

1. A folding ladder device comprising:

a sailboat mast to which is affixed one or more vertical channel bars substantially U-shaped in cross-section each vertical channel bar slidably containing a substantially flat rigid bar said flat bar containing at intervals a plurality of bracket protrusions which each support a hinge pin, a support link rotatably affixed to each hinge pin such that each link will rotate from a stowed position within the channel bar to an extended position protruding from the channel bar, a rigid foot rung shorter than said support links attached at one end rotatably by a rung pin the

extending end of each support link and at the other end rotatably to and within the channel bar by a fixed pin the distance between the fixed pin attachments being more than the combined links of the foot rung and support link, a stop placed within the channel bar at the base of said

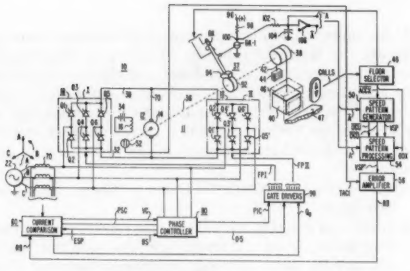
ladder which limits the downward vertical travel of the slidable flat bar to a distance of one foot rung length such that when extended the ladder device enables access from the bottom to the top of the mast, and means to retain the ladder device in a raised stowed position.

4,258,829

ELEVATOR SYSTEM

Frederick O. Johnson, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 27, 1979, Ser. No. 61,538
Int. Cl.³ B66B 1/30
U.S. Cl. 187—29 R **8 Claims**



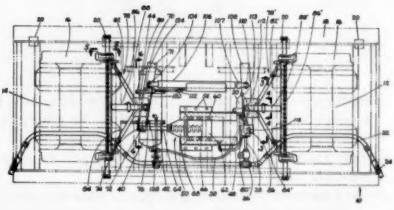
1. An elevator system, comprising:
an elevator car,
a structure having spaced landings,
motive means for moving said elevator car relative to the structure to serve the landings,
travel direction means providing up and down travel direction signals when the elevator car is to travel in the up and down travel directions, respectively,
start means providing a start signal when the elevator car is to start a run,
mode means providing a mode signal which selects one of the first and second speed modes for said elevator car,
and speed pattern means providing a speed pattern reference signal for said elevator car which directs the movement thereof,
said speed pattern means including first and second means providing first and second unidirectional speed pattern signals for said first and second speed modes, respectively, and logic means responsive to said speed pattern means, said travel direction means, said start means, and said mode means, to provide a bi-directional speed pattern signal for said motive means responsive to the selected one of said first and second unidirectional speed pattern signals, with the polarity of the bi-directional speed pattern signal being responsive to said travel direction means,
said logic means including means causing the bidirectional speed pattern signal to exponentially decay to zero magnitude in response to the travel direction means simultaneously selecting both the up and down travel directions.

4,258,830

RAILWAY BRAKE SYSTEM UTILIZING SLACK ADJUSTER IN COMPRESSION

Arthur C. Pearson, and Robert A. Sieg, both of St. Charles, Mo., assignors to ACF Industries, Inc., New York, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,936
Int. Cl.³ F16D 65/62
U.S. Cl. 188—52 **8 Claims**



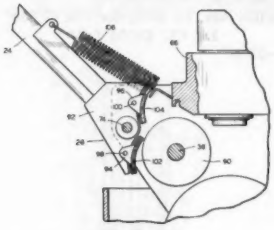
1. A railway car brake system comprising:
a trainline connected to a triple valve; said triple valve also being in fluid communication with a fluid reservoir and a brake cylinder; said reservoir also being in fluid communication through said valve with said brake cylinder; said brake cylinder being fixedly mounted on the car and including a piston movable within said brake cylinder; said piston at its outer end connected to a first horizontal brake lever, extending transversely of the car; said first horizontal lever connected generally at its mid-point to a first brake beam; whereby when pressure in said brake line is lowered, said triple valve shifts and air pressure from said reservoir moves said piston outwardly, which in turn moves said first horizontal lever longitudinally and moves said brake beam shoes into engagement with first railway wheels, and whereby when said first brake beam engages said first wheels, said first horizontal lever is fulcrumed at its mid-connection point to said first brake beam; said first horizontal lever having an opposite end connected to a slack adjuster which extends longitudinally of the car; said slack adjuster connected at its opposite end to a second horizontal lever, said second horizontal lever having an opposite end fulcrumed to a fixed portion of the car; whereby after said first brake beam engages said first railway wheels, further outward movement of said piston rod pivots said first horizontal lever about said mid-connection point and moves said slack adjuster longitudinally of the car, and in turn pivots said second horizontal lever about its pivot point; and whereby said second brake beam moves longitudinally in a direction opposite to the movement of said piston rod to cause said second brake beam to engage second railway wheels; and whereby when the pressure is increased in said brake line to a specified level, said triple valve again shifts; the pressure in said brake cylinder is reduced; said piston rod moves from left to right which causes said second horizontal lever to move from right to left to cause said second brake beam to disengage and causes said first horizontal lever to move from left to right to cause said first brake beam to disengage.

4,258,831

BRAKE MECHANISM FOR A HAND OPERATED LIFT TRUCK

Donald D. Weber, Lexington, Ky., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Apr. 25, 1979, Ser. No. 32,986
Int. Cl.[3] B60T 7/10
U.S. Cl. 188—119 **13 Claims**



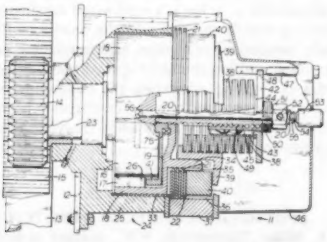
1. A brake mechanism for a hand operated lift truck having a frame, a drive motor, drive shaft, and an operator's handle extending rearwardly from the truck and pivotally attached thereto for movement from a substantially vertical to a substantially horizontal position: said brake mechanism comprising a brake drum mounted on the drive shaft for rotation therewith, first and second brake shoes having brake pads thereon, support means for connecting said shoes to said handle for movement therewith so that said first brake shoe engages said brake drum when said handle is moved upward and said second brake shoe engages said brake drum when said handle is moved downward, and a return spring connected between the operator's handle and the truck frame for holding the operator's handle when it is released in a position in which one of said brake shoes is engaged with said brake drum.

4,258,832

AUTOMATICALLY RESETTING SAFETY BRAKE

James T. Thorp, Edwardsville, Ill., assignor to East Moline Metal Products Company, East Moline, Ill.

Filed Oct. 2, 1979, Ser. No. 81,048
Int. Cl.[3] B60T 7/12
U.S. Cl. 188—184 **6 Claims**



1. In a safety brake to be connected between first and second members of a machine, said safety brake operative to stop motion between said members in response to the relative rate of motion between said members exceeding a predetermined safe speed in at least one direction of forward and reverse directions of said second member with respect to said first member, an automatically resetting actuator to control an amount of braking provided by said safety brake;

said safety brake being the type having a fixed braking member and a movable braking member with adjacent respective frictional surfaces, said first member of said machine being connected to said fixed braking member, said second member of said machine at least while said safety brake is operative to stop movement of said second member in said forward direction being connected to said movable braking member and movable only therewith, said second member being movable in said reverse direction independent of the movement of said movable braking member, a centrifugal control assembly having an input connected to said second member of said machine, said centrifugal control assembly being movable in forward and reverse directions in response to movement of said second member with respect to said first member in forward and reverse directions respectively;

said automatic resetting actuator comprising:

a screw assembly including an antifrictional screw, said screw having a head portion,

a radially extending actuating member fixed to said antifrictional screw,

a nut assembly including a nut having a threaded portion engaging said anti-frictional screw and a non-rotatable member connected to said nut to prevent rotation of said nut,

bearing means disposed between said head portion of said antifrictional screw and said movable braking member, compressible spring means disposed between said nut and said fixed braking member, said bearing means and said spring means being aligned to press said braking members together for increasing amounts of braking as said nut is moved inwardly along said antifrictional screw,

said actuating member of said antifrictional screw disposed opposite said centrifugal control assembly, said centrifugal control assembly operating in response to said speed of said second member of said machine exceeding said predetermined safe speed to contact said actuating member, said actuating member upon being contacted rotating said antifrictional screw in a first direction for moving said nut inwardly for increasing braking until said movable braking member and said second member connected thereto are stopped, and

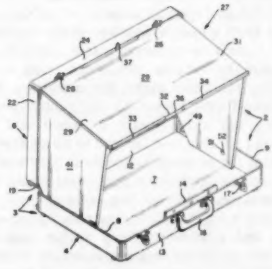
said centrifugal control assembly being moved in said reverse direction in response to movement of said second member in said reverse direction, said actuating member thereby being permitted to be rotated in said reverse direction from force applied by said spring means to said nut, said antifrictional screw being rotated in a second direction opposite from said first direction for releasing automatically the braking that has been applied by said operation of said centrifugal control assembly.

4,258,833

PORTABLE LECTERN

Charles C. Simms, 5123 Elmwood Dr., San Jose, Calif. 95130

Filed Dec. 3, 1979, Ser. No. 99,519
Int. Cl.[3] A45C 9/00
U.S. Cl. 190—11 **10 Claims**



1. A lectern structure adapted for collapsibility to facilitate portability and for extension to constitute a lectern, comprising:

(a) a case including box-like top and bottom portions pivotally interconnected and pivotal from a case-closed condition to a case-open condition; and

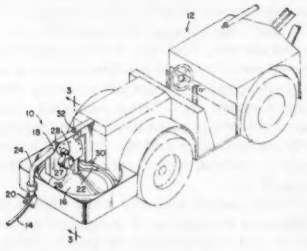
(b) a lectern assembly mounted within the case and including a top plate portion pivotally interconnected with the top of said case and side support members pivotally interconnected with said top plate portion, said side support members being pivotal from an extended position in which they engage the bottom case portion to a retracted position in which they lie substantially parallel to said top plate portion, said top plate portion being pivotal from a retracted position in which it lies substantially parallel to said top case portion to an extended position of use in which it lies substantially perpendicular to said top case portion.

4,258,834

WINDING SYSTEM FOR FLEXIBLE CONDUITS AND CABLES

Royal T. Hawley, Everett; Jagdish C. Kalyan; Alvin D. Rogers, both of Seattle, and Monte G. Sheppard, Marysville, all of Wash., assignors to Western Gear Corporation, Everett, Wash.

Filed Jul. 12, 1978, Ser. No. 923,967
Int. Cl.³ H02G *11/00*
U.S. Cl. 191—12.2 R **13 Claims**



1. A vehicle mounted system for storing flexible conduit and retracting and extending said conduit responsive to vehicle movement, comprising:

powered drive means for applying an axial force to said conduit having a magnitude and direction determined by a conduit control signal;

a generally cylindrical conduit container adapted to receive said conduit from a first conduit port of said drive means and store said conduit in a generally cylindrical coil;

fairlead means for supporting said conduit extending from said drive means to a point external of said vehicle, said fairlead means being pivotally mounted about a horizontal axis such that movement of said vehicle toward said conduit causes pivotal movement of said fairlead from a neutral position in one direction and movement of said vehicle away from said conduit causes pivotal movement of said fairlead from a neutral position in the opposite direction;

a control system for generating said conduit control signal responsive to vehicle movement, said control system including transducer means for measuring the position of said fairlead with respect to said neutral position and for actuating said drive means to move said conduit in a direction restoring said fairlead to its neutral position; and

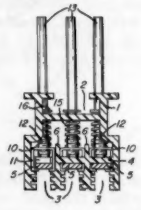
guide means for guiding said conduit from said drive means to said conduit container, said guide means having a first end positioned adjacent the conduit port of said drive means and a second end facing radially outwardly, downwardly and circumferentially within said conduit container, said guide means being rotatably mounted about an axis extending approximately through the center of said conduit coil and the conduit port of said drive means such that as said drive means extends and retracts said conduit from said vehicle the second end of said guide means moves circumferentially within said conduit container to arrange said conduit in a coil while the first end of said guide means is maintained adjacent the conduit port of said drive means.

4,258,835

TROLLEY RAIL SECTION

Donald R. Ross, Sr., Pittsburgh, Pa., assignor to U-S Safety Trolley Corporation, Pittsburgh, Pa.

Filed Nov. 13, 1979, Ser. No. 93,804
Int. Cl.³ B60M *1/34*
U.S. Cl. 191—23 A **4 Claims**



1. A trolley rail comprising a tubular housing formed of insulating material and having a front side provided with parallel laterally spaced walls forming therebetween parallel slots extending lengthwise of the housing for receiving current pick-up members movable lengthwise of the rail, a partition wall extending across the inside of the tubular housing and closing the inner sides of the slots, the opposite side walls of each slot being provided beside said partition wall with a pair of opposed grooves extending lengthwise thereof, electrical conductor bars in said slots with the edges of the bars retained in the pairs of grooves therein, said partition wall and the back side of the housing having pairs of opposed openings therethrough, each pair of openings opening into the inner side of a different one of the slots, a substantially U-shape metal clip disposed in each partition wall opening and straddling the adjoining conductor bar, each clip having a back and substantially parallel sides with inturned free front edges in front of said bar, a metal plate disposed in the clip behind the bar, set screws threaded in the back of the clip and pressing said plate against the bar to clamp it against said inturned edges, the clip having an opening in its back, a rigid metal conductor connection extending loosely through said clip opening with its front end rigidly secured to said plate, said conductor connection being provided with an abutment spaced rearwardly from the clip, and a coil spring encircling the conductor connection between said abutment and clip and compressed between them for moving said plate rearwardly away from the adjoining bar if said screws are retracted.

4,258,836

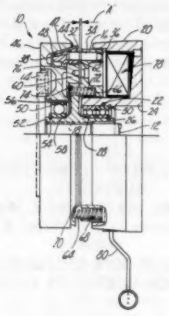
SPRING OPERATED CONE CLUTCH

Donald L. Miller, Horseheads, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Jun. 26, 1978, Ser. No. 919,532
Int. Cl.³ F16D *19/00*
U.S. Cl. 192—84 C **6 Claims**

1. In a spring operated electromagnetically released drive unit for controllably establishing a drive connection between first and second members, said drive unit including a rotatably supported ferromagnetic inner body adapted to be rotationally connected to said first member; an axially movable outer body adapted to be rotationally driven by said first member; a hub member connected to said second member and positioned to be frictionally engaged by said outer body by axial movement thereof in a first direction, and frictionally disengaged by axial

movement in the opposite direction; electromagnetic release means moving said outer body in said opposite direction, including an electromagnetic coil, and a ferromagnetic armature mounted to be axially movable and drawn in said opposite axial direction into engagement with said inner body upon energization of said electromagnetic coil; said armature and said hub being formed with surfaces coming into abutment after a predetermined degree of wear of said outer body and hub portions in frictional engagement; spring operator means urging said outer body into frictional engagement with said hub; means



connecting said armature and said outer body creating relative axial movement upon relative rotation therebetween, said connection axially connecting said armature and outer body, the improvement wherein:

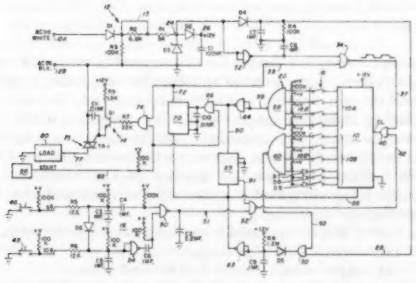
said spring operator means includes first spring means acting on said armature urging said armature in said axial direction, said spring operator means further including second spring means acting directly on said outer body, said first and second spring means acting through the connection between said armature and said outer body, whereby said connection is thereby preloaded.

4,258,837

TIMER CIRCUIT FOR VENDING MACHINE

Thomas Manos, Worcester, and Craig Self, Ashland, both of Mass., assignors to Jet Spray Cooler, Inc., Waltham, Mass.

Filed Nov. 9, 1978, Ser. No. 959,101
Int. Cl.[3] G07F 5/16; G06F 7/38
U.S. Cl. 194—1 N **18 Claims**



1. Timer circuit for a vending machine comprising;

a counter having first and second counter sections, one for demarcating coinage and another for demarcating vend period, said counter having input means for counting the counter and output lines corresponding to the sections thereof,

means responsive to coinage for generating at least one count signal coupled to the input means of the counter to count the first section of the counter,

circuit means for operating a load during the vend period,

first settable decoder means coupled from output lines of the first section of the counter for providing a signal coupled to said circuit means for initiating the vend period of the circuit means,

said counter input means including gate means receiving at least said one count signal coupling to the clock input of the counter,

means for generating clock signals (coupled) for selective coupling to the gate means and in turn to the counter to count the second section of the counter,

means responsive to said first settable decoder means and the vend period initiation signal therefrom for permitting the passage of the clock signals to the counter input means,

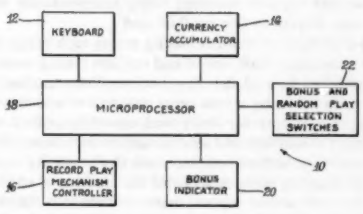
and second settable decoder means coupled from output lines of the second section for providing a signal terminating the vend period of the circuit means.

4,258,838

AUTOMATIC PHONOGRAPH BONUS AWARD SYSTEM

Donald C. Rockola, 1555 North Astor, Chicago, Ill. 60610; Michael Schneider, 5537 N. Canfield Ave., Chicago, Ill. 60656, and Leonard A. Distaso, 251 Warwick Dr., Campbell, Calif. 95008

Filed Oct. 30, 1979, Ser. No. 89,366
Int. Cl.[3] G11B 19/08
U.S. Cl. 194—1 R **7 Claims**



1. In an automatic currency-controlled phonograph having a currency accumulator for storing play credits and a keyboard for selecting plays, a bonus award system comprising:

random interval timing means for determing random time intervals;

means for sensing record plays during each random time interval;

bonus intervl timing means for determining bonus time intervals;

first optionally operable means for initiating the bonus interval timing means following each random time interval in the absence of record plays therein;

second optionally operable means for initiating the bonus interval timing means following each random time interval in the presence of record plays therein;

bonus indicating means operable during each bonus time interval; and

bonus credit means responsive to currency deposit in the accumulator and being operable to provide bonus pricing for record plays selected during each bonus time interval.

4,258,839

EGG TRANSFER BAR

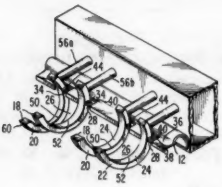
Lee H. Niederer, and Thomas O. Niederer, both of Titusville, N.J., assignors to Otto Niederer Sons, Inc., Pennington, N.J.

Filed Sep. 24, 1979, Ser. No. 78,405
Int. Cl.[3] B65G 37/00
U.S. Cl. 198—478 **13 Claims**

1. An egg trasfer bar, adapted for use in groups arranged in parallel rows to form egg carrying conveyors, each of which comprises:

(a) a main shaft extending transversely across the direction of movement of the conveyor;

(b) a plurality of sets of support members movably secured with respect to said main shaft, each said set including a first support member and a second support member each being individually and independently pivotally movable with respect to said main shaft, said first and second support members including arcuate surfaces being concave in an upwardly facing direction to provide egg receiving locations laterally along said egg transfer bar at each position of one of said sets of support members, said main shaft defining a main shaft axis extending laterally across the conveyor, said sets of support members being movably secured to said main shaft by being pivotally secured thereto to allow selective rotational movement of said sets of support members thereabout, each of said first and



second support members being independently movable with respect to one another; and

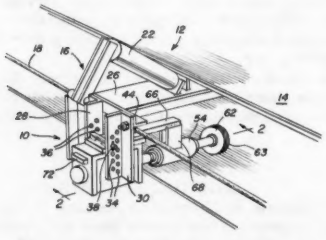
(c) a plurality of resilient biasing means each being attached to said main shaft, one of said resilient biasing means being attached to said first support members, another of said resilient biasing means being attached to said second support members for individual operable control thereof, each of said first and second support members defining an abutment surface and said main shaft defining a plurality of stopping surfaces adjacent the location of each of said first and second support members such that the abutment surface of each of said first and second support members will be biased by its associated resilient biasing means into contact with said stopping surface located thereadjacent to hold each of said first and second support members in the steady state horizontally extending position.

4,258,840

MOUNTING FOR CENTRIFUGAL SWITCH AND CONVEYOR BELT POWERED ACCESSORIES

Ellsworth V. Conkle, P.O. Box 190, Paonia, Colo. 81428

Filed Nov. 26, 1979, Ser. No. 97,731
Int. Cl.³ B65G *43/00*
U.S. Cl. 198—502 **10 Claims**



1. A mounting structure for use on an endless belt conveyor system, said mounting structure comprising:

a framework;

a framework mounting means included on said framework for mounting said framework to said endless belt conveyor system;

a drive wheel;

a drive shaft engaged with said drive wheel for rotation thereby;

shaft support means pivotally attached to said framework, offset from said framework and mounting said drive shaft for pivotal movement in a vertical plane;

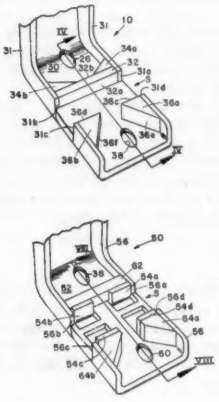
power transfer means for connecting said drive shaft to a driven device in a power transfer relation, a centrifugal switch having switch contacts and an input shaft operatively engaged with said switch contacts, said input shaft also being connected to said drive shaft by said power transfer means; and a contact condition indicating a circuit comprising a light means engaged across said contacts for being illuminated when said contacts are opened and being extinguished when said contacts are closed.

4,258,841

CHAIN BRACKET WITH STRENGTHENED CHAIN SUPPORTS

Gerald W. Gurney, Ada, and Siegfried K. Weis, Byron Center, both of Mich., assignors to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Filed Jan. 25, 1978, Ser. No. 872,265
Int. Cl.³ B65G *17/20, 17/32*
U.S. Cl. 198—687 **22 Claims**



1. In a trolley bracket for use in overhead conveyors including a first end portion including means for supporting a trolley wheel thereon, a second end portion opposite said first end and including chain link support means for supporting a link of a conveyor chain, an intermediate portion connecting said first and second end portions, and means for securing said bracket to a bracket attachment or another of said brackets, said bracket being elongated in a direction between said ends the improvement comprising:

a trolley bracket stamped from sheet metal having upstanding marginal side edge flanges extending along at least the side edges of said second bracket end portion;

said chain link support means including a rigid chain support member extending continuously across and engaging said second bracket end portion transverse to said direction of elongation of said bracket and secured between the inside surfaces of said marginal side edge flanges, said rigid chain support member being formed separately from said bracket and permanently affixed to said second bracket end portion between said marginal side edge flanges and formed from material which is harder and more wear resistant than said bracket sheet metal;

said marginal side edge flanges being interrupted at aligned positions along each side edge and having opposing, aligned, end surfaces forming said interruptions and defining a chain link receiving space;

said chain support member having a chain link engaging surface flush with a pair of said marginal side edge flange end surfaces to form a continuous chain link support surface for supporting one side edge of a chain link;

said chain link support means including means spaced in the direction of elongation of said bracket from said continuous chain link support surface and across said chain link receiving space for supporting a second side edge of a chain link; said means for supporting a second side edge of said chain link include a pair of spaced, triangular chain support pads, each pad secured against said second bracket end portion and an inside surface of said marginal side edge flange, each pad having a chain link engaging surface flush with one of said marginal side edge end surfaces and aligned with the chain link engaging surface of the other of said chain support pads, the hypothenuse of each triangle extending between the marginal side edge flange and the end of said chain link engaging surface closest to the center of said bracket.

4,258,842

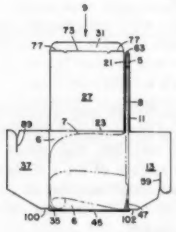
CAP DISPLAY PACKAGE

Frank B. Falkstein, P.O. Box 32705, San Antonio, Tex. 78216

Filed Apr. 16, 1979, Ser. No. 30,360

Int. Cl.[3] B65D *25/00*

U.S. Cl. 206—45.34 **7 Claims**



1. A blank for a visual display package for displaying a cap having a bill and a crown, said blank comprising a piece of material foldable to form said package including:

a. a face panel having a lower front panel, a front panel, upper front panel, and a window aperture located therein, said lower and upper front panels being connected to said front panel by a pair of spaced apart fold lines;

b. a base panel having a base flap and connected to said lower front panel of said face panel by a base panel fold line;

c. a rear panel connected to said upper front panel of said face panel by a fold line;

d. front flaps located opposite each other and connected to said lower front panel of said face panel by front flap fold lines, said front flaps having one edge aligned with one of said spaced apart fold lines on said face panel and the opposite edge aligned with said base panel fold line;

e. side panels located on opposite sides of said face panel and connected to said face panel by side panel fold lines, said side panels having one edge aligned with one of said spaced apart fold lines on said face panel and the opposite edge aligned with the remaining spaced apart fold line on said face panel;

f. rear flaps located on opposite sides of the lower portion of said rear panel and connected to said rear panel by rear panel fold lines; said face panel when folded along said spaced apart face panel fold lines forms the top of a rectangular main cavity and one wall of a flat, narrow projecting cavity, said rear panel when folded along said rear panel fold line forms a second wall of said projecting cavity and the back of said rectangular main cavity, and said base panel when folded along said base panel fold line forms the bottom of said rectangular main cavity and engages a rear edge of said folded rear panel, said front flaps, said side panels and said rear flaps when folded along appropriate fold lines enclose the sides of said rectangular main cavity and thereby form said visual display package, said cap contained in said package capable of being viewed through said window aperture.

4,258,843

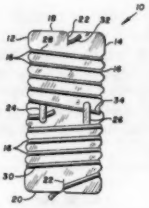
VESSELOOP DISPENSING PACKAGE

Carl G. Wymer, St. Paul, Minn., assignor to Med General, Inc., Minneapolis, Minn.

Filed Oct. 1, 1979, Ser. No. 80,492

Int. Cl.[3] A61B *17/06*

U.S. Cl. 206—63.3 **1 Claim**



1. A dispenser package for elastic vessel occluding bands used in surgical procedures, comprising:

(a) a generally rigid rectangular plastic card having first and second pairs of winding grooves formed inwardly into said card from opposed side edges thereof;

(b) first and second slits formed respectively in the opposed end edges of said card;

(c) a pair of tongue slits formed through said card proximate a medical transverse axes thereof and disposed inwardly of said opposed side edges forming first and second integrally formed tab elements, said tab elements being generally aligned and extending in opposite directions from one another;

(d) at least two elastic strands, each having one end releasably held in one of said first and second slits formed in said end edges and the other end held by a respective one of said tab elements with the portion between said one and other ends of said strands being spirally wrapped about said card with only a single turn extending through each winding groove to thereby constrain the individual turns of said strands from lateral movement; and

(e) a generally rectangular flexible plastic tubular sleeve member for receiving said plastic card therein.

4,258,844

ARTICLE CARRIER

James T. Stout, Acworth, Ga., assignor to The Mead Corporation, Dayton, Ohio

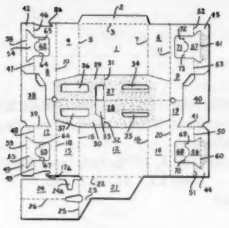
Continuation of Ser. No. 22,684, Mar. 21, 1979, abandoned. This application Jul. 8, 1980, Ser. No. 166,800

Int. Cl.[3] B65D *75/00*

U.S. Cl. 206—188 **3 Claims**

1. An article carrier comprising a pair of side walls disposed in parallel spaced relation to each other, end wall panels foldably joined respectively to the ends of said side walls and extending inwardly therefrom, medial partition structure foldably joined to the medial edges of said end wall panels and extending medially inward therefrom, handle structure secured to said medial partition structure and extending up-

wardly therefrom, a bottom panel foldably joined to the lower edge of one of said side walls, and characterized in that an auxiliary bottom panel is joined to an end edge of said bottom panel along a fold line substantially equal in length to the width of the carrier and is disposed in overlapping face contacting relation therewith, said auxiliary bottom panel being wider than said bottom panel throughout the length of said bottom



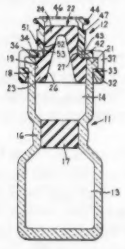
panel except for the portion thereof which is immediately adjacent said fold line and said auxiliary bottom panel being substantially equal in length to said bottom panel and being secured to the lower edge of the other of said side wall and in that a glue flap is foldably joined to the lower edge of the other of said side walls and glued to said auxiliary bottom panel so as to provide a double thickness of material over substantially the entire carrier bottom.

4,258,845

ACTIVATOR CLOSURE FOR TWO-COMPARTMENT VIAL

Alan W. Potts, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 20, 1979, Ser. No. 96,263
Int. Cl.³ B65D *81/32*
U.S. Cl. 206—221 **6 Claims**



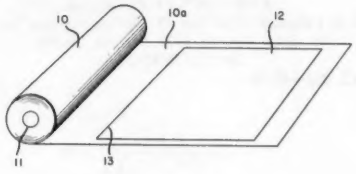
1. In a closure structure for a two-compartment vial having an open neck at one end thereof, said closure structure including a resilient stopper for sealingly closing the open neck of said vial and a cap joined to said vial for retaining the stopper therein, said stopper including a first annular stopper portion sealingly seated within said neck and a second stopper portion coaxially aligned with and protruding outwardly of said vial from said first stopper portion, said second stopper portion being of substantially reduced diameter relative to said first stopper portion so as to define an outwardly directed shoulder at the interface therebetween, and said cap including an annular gripping portion which surrounds said neck for securing said cap to said vial, said gripping portion including an annular platelike portion which overlies the axial end face of said neck and projects radially inwardly thereof so as to radially overlap the shoulder formed on said stopper to prevent withdrawal of the stopper from the vial, the cap also including a sleeve portion which closely surrounds the second stopper portion and has the lower axial end thereof positioned opposite but spaced upwardly a selected distance from said shoulder, said sleeve portion in the vicinity of the lower end thereof being rigidly and integrally joined to said platelike portion by a fracturable connection, said sleeve portion being sized so as to be movable into the vial neck during activation, the improvement comprising one-way locking structure coacting between the sleeve portion and said stopper for preventing the stopper from being moved inwardly of the vial relative to the sleeve portion after the closure structure has been activated, said one-way locking structure permitting said sleeve portion during initial activation thereof to be axially moved relative to said second stopper portion until the lower end of said sleeve portion abuts said shoulder, said one-way locking structure becoming engaged at this latter intermediate position to prevent the stopper from being depressed inwardly of the vial independently of the sleeve portion.

4,258,846

INTERLEAVED ROLLS OF WEB MATERIAL

Edgar A. Campo, Columbus, Ohio, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 26, 1979, Ser. No. 33,439
Int. Cl.³ B65H *54/00;* **B65D** *85/66*
U.S. Cl. 206—412 **7 Claims**



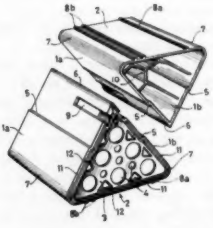
1. A wrinkle-free roll of web material of indefinite length and more than about two hundred fifty layers having an interleaf located in the roll, less than about two hundred outer layers beneath the surface of the roll, said interleaf having a width of more than about one-half of the width of the web material and a length of more than about one-third of the circumference of the roll.

4,258,847

NONDEFORMABLE CONTAINER

Henri J. M. Nierman, 6 Keistraat, 3512 UV Utrecht, Netherlands

Filed Jul. 19, 1979, Ser. No. 59,117
Int. Cl.³ B65D *1/24, 21/02, 25/28*
U.S. Cl. 206—504 **8 Claims**



1. A nondeformable container comprising a bottom wall and first, second and third side walls with a partition thereinbetween for a plurality of bottles, said side walls of the container forming a trilateral prism, with said bottom wall at one end of said prism, the adjoining first and second side walls each including a step dividing each of said first and second side walls

into two parts of which one part is recessed toward the interior of said container with respect to the other part, said two parts of each of said first and second side walls defining first stacking means for side-by-side mating with one of a first and second side wall of a like container, and said third wall is provided with protruding ribs defining second stacking means for side-by-side mating with a third wall of a like container.

4,258,848

PACKAGING MATERIAL FOR PHOTOSENSITIVE MATERIALS COMPRISING POLYOLEFIN LAYERS

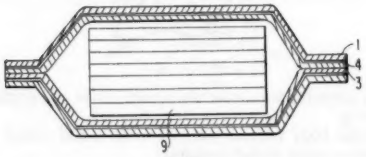
Mutsuo Akao; Kenzo Kashiwagi, and Koji Inoue, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 25, 1979, Ser. No. 60,313

Claims priority, application Japan, Jul. 28, 1978, 53/103994[U]

Int. Cl.[3] B32B *15/08, 27/08, 27/20, 27/32;* **B65D** *65/40*

U.S. Cl. 206—524.2 **14 Claims**



1. A high density polyethylene film laminate comprising at least two high density polyethylene films uniaxially stretched at a draw ratio of about 2.2 to 4.2, said films being oriented such that the stretching axis of one film forms an angle of about 45° to 90° with those of the film(s) nearest it and at least one of said films containing a light-screening pigment.

9. The laminate of claim **1**, wherein said laminate is used as a packaging material for a photosensitive material.

4,258,849

FLUSHABLE TOWELETTE

Gerald D. Miller, Belle Mead, N.J., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 18, 1978, Ser. No. 870,552

Int. Cl.[3] B65D *81/24*

U.S. Cl. 206—812 **6 Claims**

1. A packaged towelette composed of a sheet of non-woven fibers impregnated with polyvinyl alcohol and maintained in wet condition within said package by contact with a non-alkaline aqueous solution of boric acid.

4,258,850

APPARATUS FOR SORTING WORKPIECES BELONGING TO DIFFERENT CLASSES

Sergio Solaroli, Bologna, Italy, assignor to Finike Italiana Marposs, S.p.A., S. Marino, Italy

Filed Apr. 12, 1979, Ser. No. 29,547

Claims priority, application Italy, Apr. 17, 1978, 3394 A/78

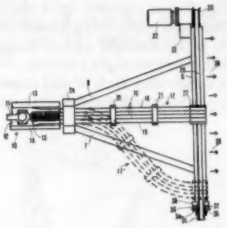
Int. Cl.[3] B07C *9/00;* **B65G** *11/10, 47/46*

U.S. Cl. 209—655 **12 Claims**

1. An apparatus for sorting pieces belonging to different classification classes from a loading device to a plurality of outputs for the different classification classes, comprising:

guide means to direct the pieces towards relevant outputs, including a guide, for gravitationally sliding the pieces, with a first end communicating with the loading device for receiving a piece to be sorted, an intermediate section and a second end, the second end being mobile perpendicularly to the sliding direction of the piece in correspondence with the same second end, in order to be selectively placed in communication with one of the outputs; and

control means adapted to receive signals corresponding to the class of each piece in order to position the second end of the guide in correspondence to the output related to the



piece to be sorted, the control means including a mobile belt, the second end of the guide being fixed to the mobile belt.

4,258,851

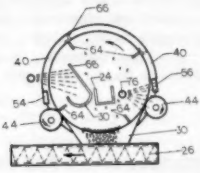
RAISIN SEPARATING MACHINE

Herbert A. Lion, 4855 E. Townsend Ave., and Alfred Lion, Jr., 5493 E. Heaton Ave., both of Fresno, Calif. 93727

Filed Jul. 2, 1979, Ser. No. 53,959

Int. Cl.[3] B07C *9/00*

U.S. Cl. 209—700 **20 Claims**



1. In a raisin culling machine for removing raisins spoiled by mold or the like from raisins which are still acceptable for consumption, said machine including;

a rotatable cylindrical member being mounted on an angle and having a plurality of orifices therein, for tumbling raisins therein;

means disposed in said member for lifting the raisins in said member a portion of the way around the inside perimeter of the cylindrical member when said member is rotating and dropping said raisins to the bottom of said member causing the raisins spoiled by mold to adhere to the orifices of said rotatable member;

means disposed on the outside of said member for directing a fluid against said member for dislodging said raisin from said rotatable member; and

a means disposed in said member and in alignment with the fluid for catching the raisins dislodged thereby.

4,258,852

AUXILIARY COUNTERWEIGHT ARRANGEMENT FOR MOBILE CRANE

Dieter C. Juergens, Bark River, Mich., assignor to Harnischfeger Corporation, West Milwaukee, Wis.

Filed May 25, 1979, Ser. No. 42,366

Int. Cl.[3] B66C *23/72*

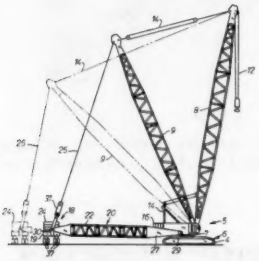
U.S. Cl. 212—178 **11 Claims**

1. A crane of the type comprising a platform mounted on support means for rotation about a vertical axis, rigid upwardly projecting load supporting means on said platform comprising a boom, a load supporting line extending from the top of said boom and normally in a vertical plane that also substantially contains said boom and said axis, mobile counterweight carrier

means spaced from said platform and connected therewith, and counterweight means supported by said carrier means and having a connection with the top of said load supporting means for resisting tilting forces imposed upon the boom by a load carrier by said line, said crane being characterized by:

A. said mobile counterweight carrier means comprising a pair of mobile counterweight carriers;

B. rigid means connecting each of said counterweight carriers with the platform and maintaining said counterweight



carriers in spaced relation to one another and to the platform, with the counterweight carriers at equal distances to opposite sides of said vertical plane and at substantially equal distances from the platform; and

C. said counterweight means comprising a counterweight carried by each of said counterweight carriers, each of said counterweights having a guying connection with the top portion of said load supporting means whereby tilting forces in directions transverse to said vertical plane are resisted.

4,258,853

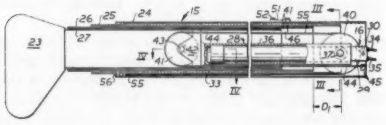
EXTENSIBLE BOOM FOR CRANES

Stephen H. Gill, Mentor, Ohio, and Theodore B. Hogg, Aurora, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 24, 1978, Ser. No. 899,433

Int. Cl.[3] **B66C** *23/06, 23/62*

U.S. Cl. 212—264 **18 Claims**



1. An extensible boom comprising at least first, second, and third telescopically disposed sections,

extensible and retractable first actuating means connected to said first section, and

second actuating means interconnected between said first, second, and third sections and said first actuating means for extending said second and third sections relative to said first section and to further extend said third section relative to said second section in response to selective extension of said first actuating means, said second actuating means including at least one pair of longitudinally spaced first and second pulleys rotatably mounted on said first actuating means and cable means entrained about said pulleys and having opposite ends thereof secured to said first section and to said third section,

fastening means for releasably securing said cable means to said third section,

means defining aligned apertures through said first and second sections, overlying said fastening means, and

a cover plate releasably attached exteriorly on said first section normally covering said apertures whereby said fastening means may be exposed upon removal of said cover.

4,258,854

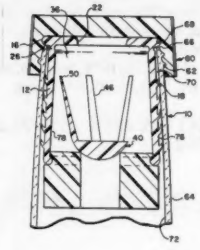
BOTTLE FITMENT

Thomas E. Wright, 6340 Americana Dr., Clarendon Hills, Ill. 60514

Filed Sep. 4, 1979, Ser. No. 72,432

Int. Cl.[3] **B65D** *49/02*

U.S. Cl. 215—21 **8 Claims**



1. An anti-refill fitment for the tubular outlet of a container comprising:

a tubular body member adapted to be sealed within said tubular outlet of said container;

a circumferential flange at one end of said body member defining a generally central outlet;

a base member associated with the other end of said tubular body member;

said base member defining an opening communicating with said container and having a valve seat opposed to and axially spaced from said central outlet;

said base member and body member having cooperating rib-groove means fitting together in a snap-fit relationship; and;

a valve member disposed between said central outlet and said opening;

said valve member adapted to seal against said valve seat in the upright position of said container and adapted to allow open communication from said container through said central outlet in the pouring position of said container.

4,258,855

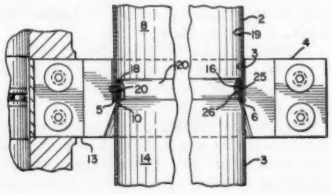
ADHESIVE APPLICATION OF TWO-PART CONTAINER

Gerald A. Gordon, Skokie, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Jul. 5, 1979, Ser. No. 54,780

Int. Cl.[3] **B65D** *6/32, 8/04;* **B23P** *25/00*

U.S. Cl. 220—8 **6 Claims**



1. A container having a pair of axially aligned sections, each having a thin walled metalic body of the same diameter with an end portion defining an open end with a raw edge.

one of said sections having a thick annular bead of adhesive material within the end portion thereof,

the end portion of the other section being circumferentially

precompressed and inserted into said one section an extent axially of the container to bury the edge thereof within said sealing material and cleave a thin band of said material between said end portion,

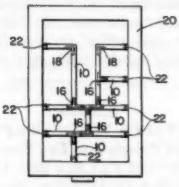
said other section being released from its precompressed state to expand radially and thereby hold said thin band of sealing material between said sections under compression without shearing about the entire circumferential extent thereof.

4,258,856

SPACE DIVIDING ASSEMBLY

Douglas S. Marling, 2511 Elizabeth St., Janesville, Wis. 53545

Filed Sep. 22, 1978, Ser. No. 944,861
Int. Cl.³ B65D *1/36, 6/06*
U.S. Cl. 220—22.3 **11 Claims**



1. A space dividing assembly for dividing a space so as to define a plurality of separate compartments, said assembly comprising:

a plurality of runner members of flat, generally rectangular shape and including longitudinal slots formed in the upper and lower edges thereof and extending along said edges; and

a plurality of connector members for interconnecting said runner members together to form the space dividing assembly, each of said connector members including a generally planar body portion which extends parallel to and abutting an edge of a runner member and at least two generally planar flanges extending outwardly from said body portion on the same side of the connector member that abuts said edge of a runner member, said flanges engaging in the slots of juxtaposed ones of said runner members so as to connect juxtaposed runner members together; at least one of said connector members comprising a substantially T-shaped member comprising a said body portion comprising a T-shaped substantially planar base having a bar portion and a central leg portion, a first flange being joined along one edge thereof to the longitudinal edge of said bar portion away from said leg portion and extending perpendicularly to the plane of said base and a second flange extending perpendicularly to the plane of said base on the same side of said base as said first flange and orthogonally to said first flange, said first and second flanges of said T-shaped member being spaced apart in the area of joindure of said bar portion and said leg portion and said first and second flanges of said T-shaped member being received in respective slots of two juxtaposed runner members;

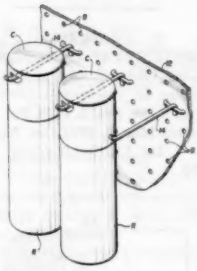
at least one further said connector member comprising a substantially L-shaped member comprising a said body portion comprising a substantially planar L-shaped base and first and second flanges being joined to and extending from a respective edge of the respective legs of said L-shaped base perpendicularly to the plane of the L-shaped base on the same side of said L-shaped base and orthogonal to each other, said first and second flanges of said L-shaped base being spaced apart in the area of joindure between the legs of said L-shaped base and being received in slots of two juxtaposed runner members.

4,258,857

DISPLAY CAP

Eugene S. McGee, Tampa, Fla., assignor to Grow Group, Inc., New York, N.Y.

Filed Aug. 16, 1978, Ser. No. 934,116
Int. Cl.³ B65D *51/24*
U.S. Cl. 220—212 **1 Claim**



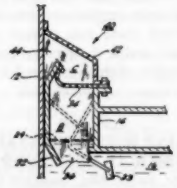
1. A display cap for detachably securing to the upper end portion of a container, said cap comprising a tubular body having a side wall closed at one end by a top wall unitarily formed therewith and opened at the the other end for mounting to the container, said top wall bounded by a closed, planar exterior wall surface and a closed, planar interior wall surface spaced apart by the thickness of material of said top wall, the outer surface of said side wall being in the same plane along any vertical line about its periphery along said outer surface from adjacent said other end to adjacent said exterior wall surface, a continuous, substantially straight passage extending through said thickness of material perpendicular to the longitudinal axis of said body and being below said exterior wall surface and above said interior wall surface, said passage having opposite opened ends through said side wall for accomodating an associated extending support pin for hanging the container with said cap secured thereon in a display position, said passage being surrounded continuously about the whole periphery thereof and along its entire length by said thickness of material.

4,258,858

APPARATUS FOR SEALING FLOATING ROOF TANKS

Robert L. Russell, Costa Mesa, Calif.

Filed Jul. 9, 1979, Ser. No. 55,825
Int. Cl.³ B65D *87/18*
U.S. Cl. 220—222 **15 Claims**



1. An apparatus for reducing vapor emissions to the atmosphere through the annular space between a floating roof and the wall of a floating roof tank which contains a body of volatile liquid, said apparatus comprising:

first sealing means fixedly coupled to said floating roof and adapted to be yieldably urged against said wall so as to prohibit direct fluid communication through said annular space between said body of volatile liquid and the atmo-

sphere in the absence of accidental defects or gaps in said first sealing means; and

a first plurality of baffles coupled to said first sealing means and disposed between said first sealing means and said body of volatile liquid in a first annular vapor space around the circumference of said floating roof, said first plurality of baffles being adapted to substantially inhibit fluid flow through said first vapor space.

4,258,859

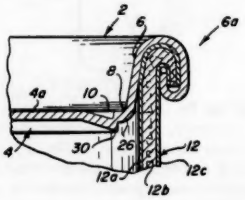
NO-FIN SCORED METAL ENDS FOR CONTAINERS

Teddy M. Westphal, Glencoe, Mo., assignor to Boise Cascade Corporation, Boise, Id.

Division of Ser. No. 9,188, Feb. 2, 1979, Pat. No. 4,216,736. This application Mar. 3, 1980, Ser. No. 126,442

Int. Cl.³ B65D *41/32*

U.S. Cl. 220—270 **7 Claims**



1. A unitary metal end closure member for composite containers and the like, comprising

(a) a horizontal generally disk-shaped central panel portion;

(b) an annular upwardly extending chuckwall portion connected at its lower end with the peripheral edge of said central panel portion by a curved radius portion, the upper end of said chuckwall portion being adapted for connection with the upper end of a container body;

(c) one horizontal surface of said central panel portion containing a scoreline for defining at least a partially removable panel section, said scoreline having in traverse cross-section a generally trapezoidal cross-section including

(1) a flat generally horizontal bottom wall; and

(2) a pair of generally divergent side walls;

(d) the other horizontal surface of said central panel portion being stepped to define a region of reduced thickness defining a horizontal relieved surface extending from a location opposite the juncture between one scoreline side wall and the scoreline bottom wall in a direction away from the scoreline, whereby the distance between the scoreline bottom wall and the plane containing said other horizontal surface is greater than the distance between said scoreline bottom wall and said horizontal relieved surface, so that upon progressive removal of said removable panel portion from said central panel portion, the formation of undesirable sharp metal fins or projections on the residual portion of the metal end is avoided.

4,258,860

VENDING MACHINE WITH ADJUSTABLE DIVIDER IN HELICAL CONVEYOR

William C. Boettcher, Foley, Mo., assignor to D.O.V.E. Equipment Corporation, Winfield, Mo.

Filed May 2, 1979, Ser. No. 35,421

Int. Cl.³ G07F *11/36*

U.S. Cl. 221—75 **15 Claims**

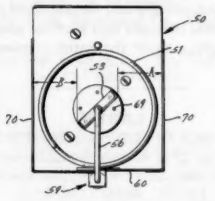
1. A vending machine item discharge unit comprising:

(a) a tray having side, rear and bottom walls;

(b) helical means having a plurality of convolutions along its length to retain articles to be dispensed in the convolutions;

(c) drive means connected to the helical means to rotate said helical means in predetermined increments upon activation by a customer, and

(d) adjustable divider means positioned within the helical means dividing the helical means into compartments of



substantially equal width and movable to change the spacing between the tray side walls and said divider means to compensate for articles of different width in the convolutions of the said helical means while maintaining the compartments of substantially equal size.

4,258,861

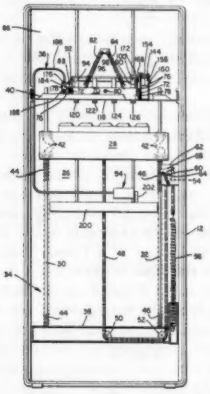
SINGLE-PAPER VENDING APPARATUS

Philip J. Traill, 123 Pamela Ann Dr., Fort Walton Beach, Fla. 32548, and Joe H. Nall, P.O. Box 1093, Crestview, Fla. 32536

Filed May 29, 1979, Ser. No. 43,305

Int. Cl.³ B65H *1/12*

U.S. Cl. 221—213 **3 Claims**



1. Apparatus for vending papers singly, said apparatus comprising:

means for enclosing a plurality of said papers, said enclosure means having a longitudinal axis, a lateral axis, an upper portion, a lower portion, and a dispensing slot in said upper portion;

platform means movable parallel to said longitudinal axis of said enclosure means for stacking said plurality of papers thereon;

means for urging said platform means from said lower portion toward said upper portion of said enclosure means;

cart means movable parallel to said lateral axis of said enclosure means, said cart means being disposed in said upper portion of said enclosure means, said cart means having a first position and a second position;

means operatively associated with said cart means for moving said cart means from said first position to said second position when said means is manually actuated;

means for urging said cart means from said second position toward said first position;

means attached to said cart means for selectively engaging a top paper of said stack of papers disposed adjacent said cart means such that said engaging means dispenses said top newspaper out of said dispensing slot as said cart means is moved from said first position to said second position and said engaging means does not engage a top paper as said cart means is moved from said second position to said first position;

window means for displaying a newspaper disposed therebehind; and

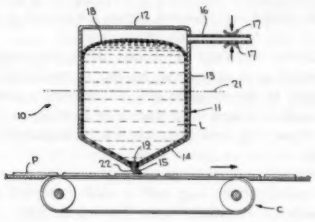
means for selectively retaining said newspaper behind said window means, said retaining means having a first position whereby said newspaper is retained behind said window means and a second position whereby said newspaper is dispensed by gravity feed from a slot formed in said enclosure means below said window means, said retaining means being operable in response to movement of said cart means such that said retaining means is maintained in said first position when papers are stacked on said platform means and said retaining means is in said second position when no papers are stacked on said platform means and said cart means is in said second position.

4,258,862

LIQUID DISPENSER

Ivar Thorsheim, Box 242S, Oslo 1, Norway

Filed Jun. 26, 1979, Ser. No. 52,239
Int. Cl.³ B67D *5/08*
U.S. Cl. 222—56 **1 Claim**



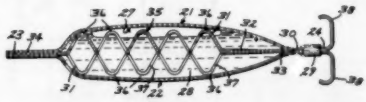
1. A device for dispensing liquids such as paint, lacquer, glue and like containing solvents which evaporate in air at room temperature, comprising a hollow closure of rigid material having a bottom, side and top walls, an outlet opening in said bottom wall, a collapsible container disposed within said enclosure, said container being of flexible material adapted to be filled with one of the dispensing liquids, said container having an outlet orifice coincident with said outlet opening, an air inlet communicating with the interior of only said closure for establishing an atmospheric pressure within said closure, said air inlet comprising an open-ended tube mounted on said enclosure for establishing an atmospheric pressure within said closure, and means for closing only said tube to create a subatmospheric pressure level within said closure, said closing means comprising an open pan and an applicator roll associated therewith, a flexible diaphragm mounted on said pan defining a receptacle on one side thereof for a quantity of water and defining a fountain on the opposite side thereof for a quantity of liquid to be dispensed, said tube being spaced from a bottom wall of said receptacle, whereby the level of the water in said receptacle changes relative to the amount of liquid remaining in said fountain while being dispensed by said applicator so as to thereby accordingly open and close said open end of said tube for controlling the flow of liquid therethrough.

4,258,863

FLEXIBLE DISPENSING CONTAINER HAVING INTERNAL CONTAINER WALL RUPTURING MEANS

Richard A. Ness, Rte. 6, Fergus Falls, Minn. 56537

Filed Jan. 8, 1979, Ser. No. 1,533
Int. Cl.³ B65D *17/42*
U.S. Cl. 222—83 **6 Claims**



1. A dispensing container comprising:

(a) an envelope having opposite side walls, at least one which is flexible, and opposite side margins and end margins, said envelope defining a closed chamber for fluid inwardly of said margins;

(b) one of said margins including a rupturable portion adjacent said chamber;

(c) an envelope rupturing means comprising an elongated longitudinally extensible member in said chamber, said member having one end portion defining a point directed toward said rupturable portion and an opposite end disposed at the margin of said envelope opposite said rupturable portion;

(d) said member including an actuating portion formed from a flat sheet material having outer margins which generally conform to the margins of said envelope, said actuating portion including portions which are displaced from the plane of the sheet material to form corrugations having peaks which are spaced apart in the direction of extending movement of said member and engageable with said opposite side walls;

(e) said member being responsive to inward pressure of said side walls against said spaced apart peaks to extend said point into rupturing engagement with said rupturable portion, whereby to produce communication between said chamber and the exterior of said envelope.

4,258,864

TOOTHPASTE DISPENSER

Peter K. Karamanolis, and Peter W. Tsaoussis, both of 231 Ellington Rd., East Hartford, Conn. 06108

Filed Jan. 21, 1980, Ser. No. 113,652
Int. Cl.³ B65D *35/54*
U.S. Cl. 222—96 **16 Claims**

1. A toothpaste dispense comprising:

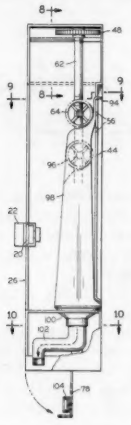
a. a housing having first and second axes and adapted for mounting an elongated toothpaste tube therein with the longitudinal axis of the associated tube extending along said first axis;

b. squeeze means movably mounted in said housing for movement along said first axis to squeeze the assoicated toothpaste tube mounted in said housing;

c. drive means mounted in said housing and operable in first and second directions, said drive means being operatively engaged with said squeeze means for moving said squeeze means along said first axis to squeeze toothpaste out of the associated toothpaste tube mounted in said housing when said drive means is operated in said first direction and for moving said squeeze means in the opposite direction when said drive means is operated in said second direction;

d. gate means on said housing movable between a closed position, in which said gate means is positioned to prevent the flow of toothpaste out of the associated toothpaste tube mounted in said housing, and an open position in which said flow is permitted, said gate means being operatively engaged with said drive means for movement of said gate means to said closed position when said drive

means is operated is said second direction and movement of said gate means to said open position when said drive means is operated in said first direction, said gate means remaining in said open position when said drive means continues to operate in said first direction; and



e. means operable upon movement of said gate means to said closed position to stop the movement of said squeeze means in said opposite direction, said squeeze means thereby being enabled to start its squeezing action at successively farther-advanced positions along the associated toothpaste tube after successive closures of said gate means.

4,258,865

DISPENSER FOR LIQUID OR PASTY SUBSTANCES SUCH AS LIQUID SOAP AND THE LIKE

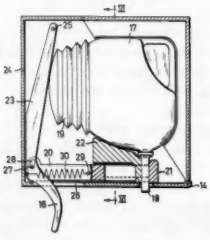
Joachim Vahl, Gansenbergweg 60, 4224 Hünxe, Fed. Rep. of Germany, and Alfred Tiefenthal, Kastellstr. 4, 4132 Baerl, Fed. Rep. of Germany

Filed Dec. 11, 1978, Ser. No. 969,565

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1977, 2755112

Int. Cl.³ B05B 9/04

U.S. Cl. 222—213 **6 Claims**



1. A dispenser for liquids, pasty substances, powdered substances such as soap and the like, comprising:

a hollow housing;

an integral hollow container with an interior volume, the container being removably securable within the housing and having a resilient compressible and decompressible downwardly extending discharge tube which extends downwardly out of the housing when the container is secured therewithin, and further having a compressible and decompressible bellows formed of a resilient material integral with the container in a manner that the bellows portion may be compressed telescopically to reduce the interior volume of the container and thereby force any substance contained in the container out of the discharge tube; and

manually operable means cooperating with the housing, and with the container when the container is secured within the housing, the means simultaneously compressing the bellows and decompressing the delivery tube when in a delivery position, and the means simultaneously decompressing the bellows and compressing the delivery tube when in a closed position.

4,258,866

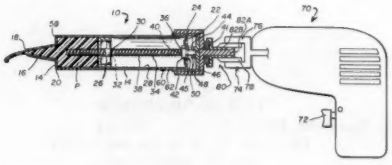
DISPENSER ACTUATING CHUCK ADAPTER

Carl P. Bergman, 2316 NE. 5th Ave., Lighthouse Point, Fla. 33064

Continuation of Ser. No. 811,886, Jun. 20, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 15,304

Int. Cl.³ B67D 5/46

U.S. Cl. 222—333 **4 Claims**



1. For interposition between

(a) a rotary power tool having a chuck for gripping a shaft to be rotated and a switch means for actuating the rotary power tool to rotate the chuck; and

(b) a tubular container of viscous plastic material, having a dispenser spout at one end, having a rotationally twistable actuator at the opposite end, and having a piston means therewithin which is advanced by twisting said actuator, for dispensing said viscous plastic material from said spout;

(c) an adapter, comprising:

a forwardly open cup and a shaft mounted to extend coaxially, exteriorly from the rear of said cup for securement in said annular chuck,

said cup being sized and shaped to receive said twistable actuator and having surface means therein for interconnecting the cup and the twistable actuator for corotation, and said shaft being couplable to the cup, so that when the shaft is secured in the chuck and the chuck is rotated, such rotation is transmissible from the chuck to the rotary actuator via coupling of the shaft and the cup;

clutch means interposed between the shaft and the cup engageable for rotating the cup from the shaft and disengageable for permitting rotation of the shaft without producing corresponding rotation of the cup;

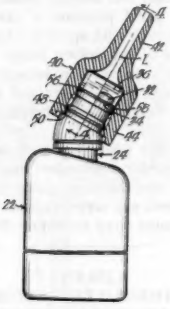
said clutch means comprising:

a division of said shaft into a central core secured to the cup and a surrounding sleeve, means for accommodating limited axial relative movement of the core and sleeve; a first clutch plate provided on the exterior of the cup circumferentially surrounding said core and a second clutch plate in the form of an annular collar secured on said sleeve, so that in a first axial position of said core relative to said sleeve the first clutch plate is in driven contacting relation with said second clutch plate and so that in a second axial position of said core relative to said sleeve the first clutch plate is out of driven contacting relation with said second clutch plate.

4,258,867
HERMETICALLY SEALED CONTAINER WITH TWISTABLE OVERCAP

Gerhard H. Weiler, South Barrington, and Dieter H. Nagel, Des Plaines, both of Ill., assignors to Automatic Liquid Packaging, Inc., Arlington Heights, Ill.

Filed Mar. 19, 1979, Ser. No. 22,000
Int. Cl.[3] B67B 7/26
U.S. Cl. 222—507 14 Claims



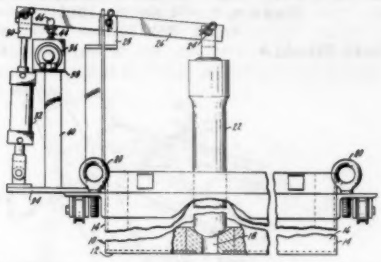
1. A hermetically sealed container comprising:
a hollow body portion for containing a liquid;
a neck portion at one end of said hollow body portion, defining a container access opening and unitary with the hollow body portion;
a closure portion at the distal end of said neck portion and unitary therewith;
said closure portion including a substantially planar end wall extending across said access opening, a removable cap means, and a frangible web unitary with said cap means and said end wall;
an overcap covering said closure portion, rotatably mounted on said neck portion, and provided with an integral dispensing nozzle, said nozzle spaced from and communicating with said closure portion end wall;
said closure portion end wall defining a container contents-dispensing aperture therein and being unitary with said neck portion;
said removable cap means beig situated over said aperture; and
said overcap being provided with retainer means mating with said removable cap means and adapted to break said frangible web when the overcap is rotated.

4,258,868
LIMIT STOP FOR CONTROLLING STOPPER ROD TRAVEL IN A BOTTOM POUR LADLE

Leo I. Drysh, St. Charles, Ill., assignor to Moline Corporation, St. Charles, Ill.

Filed Aug. 3, 1979, Ser. No. 63,371
Int. Cl.[3] B22D 41/10
U.S. Cl. 222—602 1 Claim

1. A ladle for the pouring of a heated molten material such as iron including a ladle body defining a chamber for holding a heated molten material, a bottom pour opening in said chamber, a stopper rod movable between open and closed positions relative to said pour opening to control the flow of molten material therethrough, an arm pivotally supporting said stopper rod, operating means attached to said arm for causing movement thereof to thereby move said stopper rod between open and closed positions relative to said pour opening, the improvement comprising means for adjustably controlling movement of said arm to thereby vary travel of said stopper rod relative to said pour opening, including a stop arranged for contact with said arm for limiting movement thereof, means for adjustably moving said stop including an air motor connected thereto, an air cylinder forming a part of said operating means for said stopper rod and being in pneumatic circuit with said air motor, and a flow control valve connected to said air

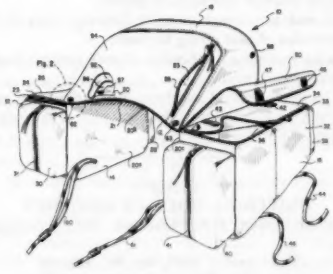


cylinder for reducing the pressure therein to reduce resistance by said air cylinder to movement of said stop by said air motor thereby permitting movement of said stop during operation of said stopper rod.

4,258,869
SADDLE PACK

Wayne P. Hilgendorff, 2850 Holiday Ranch Loop Rd., Park City, Utah 84060

Filed Apr. 30, 1979, Ser. No. 34,215
Int. Cl.[3] B62J 9/00
U.S. Cl. 224—32 A 25 Claims



1. A saddle pack comprising:
a first side housing, the first side housing comprising a first compartment having a zippered closure and a first overflap, the first overflap serving as a first cover over the first compartment and zippered closure;
a second side housing, the second side housing comprising a second compartment having a zippered closure and a second overflap, the second overflap serving as a second cover over the second compartment and zippered closure; and
a support web interconnecting the first side housing and the second side housing, the support web comprising a panel having a curvilinear cutout along one edge of a center segment, the cutout being specifically configurated to conform to the cantle base of a saddle, the support web supporting the first side housing and the second side housing in a generally vertical orientation when the saddle pack is mounted to the saddle, said support web further comprising a pouch means having at least one zipper-enclosed pouch.

4,258,870

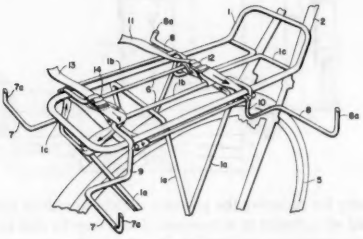
PANNIER BAGS AND DEVICE FOR ATTACHMENT TO BICYCLE

Jack Edelson, 1161 Mission St., San Francisco, Calif. 94103

Filed Feb. 4, 1980, Ser. No. 118,417

Int. Cl.³ B62J *9/00*

U.S. Cl. 224—32 A **4 Claims**



1. A device for attachment of a pair of pannier bags to the opposite sides of a rear end luggage carrier rack of a bicycle comprising the combination of:

a pair of brackets disposed for positioning upon the top of said carrier rack;

said brackets comprising a frame section and oppositely spaced transversely projecting prong sections;

said frame section being disposed for engaging longitudinal members of said carrier rack;

means for fastening said frame section to said carrier rack;

loop members positioned upon and forming a part of adjacent opposite vertical end faces of said pannier bags;

said prong sections of said brackets being disposed for projection through said loop members;

hooked ends positioned upon and forming a part of the outer extremities of said prong sections;

means for fastening the bottom of said pannier bags to the frame of said bicycle;

whereby movement of said bags in any direction as well as twisting in a horizontal plane while said bicycle is in motion is prevented.

4,258,871

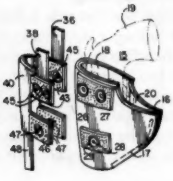
UNIVERSAL HOLSTER ASSEMBLY

Robert J. McMahon, 3400 Pickertown Rd., Warrington, Pa. 18976

Filed Apr. 2, 1980, Ser. No. 136,551

Int. Cl.³ F41C *33/02;* **F41B** *13/04*

U.S. Cl. 224—192 **10 Claims**



1. A universal holster assembly for hand guns which comprises

a holster body having an interior pocket to carry a hand gun and having opposite outer side faces and upper marginal edges,

upper and lower exposed panel portions on each of said opposite outer side faces of said holster body,

each of said panel portions being of thistle cloth material for selective right and left hand disposition of said holster body,

a plurality of upper snap members associated with said upper panel portion,

a lower snap member associated with said lower panel portion, and

supporting means for said holster body comprising a holster positioner and support means for retention on at least one of said opposite outer side faces of said holster body,

said holster positioner and support means having upper and lower exposed panel portions of complemental thistle cloth for engagement with upper and lower panel portions on said side face of said holster body,

a plurality of upper snap members associated with said upper panel of said holster positioner and support means for engagement with said upper snap members of said holster body, and

a lower snap member associated with said lower panel of said holster positioner and support means for engagement with said lower snap member of said holster body,

said holster positioner and support means having a vertically disposed positioning strap extending therefrom.

4,258,872

CONTROLLABLE THREAD EXTRACTOR DEVICE WITH AN AIR PASSAGE CONNECTED TO A VACUUM SOURCE

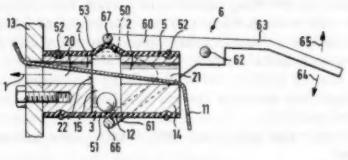
Gerd Husges, and Walter Mayer, both of Ingolstadt, Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Dec. 11, 1978, Ser. No. 968,487

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2757976

Int. Cl.³ B65H *51/16*

U.S. Cl. 226—91 **9 Claims**



1. A controllable textile thread extractor device for use with a textile machine having an air passage connected to a vacuum source comprising:

a shaft arranged generally perpendicular to said air passage dividing said air passage into first and second longitudinally aligned portions:

a ball received in said shaft;

said first portion connected at one end to said vacuum source;

a seat for said ball formed at an opposing end of said first portion facing said shaft;

said second portion having one end disposed adjacent a thread path on said textile machine through which said thread is received for extraction and an opposing end facing said shaft;

said shaft extending in at least one direction beyond said air passage a distance at least generally corresponding to the dimension of the diameter of said ball and terminating to define first and second ends;

closure means covering said shaft at said first and second ends;

actuating means for causing said ball to move into a closed position abutting and seated on said seat and an open position wherein said ball is retained in said shaft off of said seat; and

said air passage and said shaft being arranged in a housing

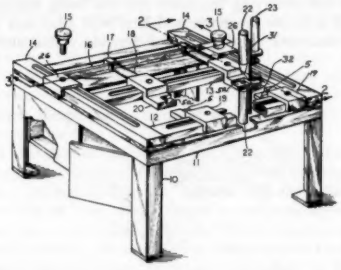
and said closure means including an elastic closure forming a sleeve surrounding the housing.

4,258,873

MACHINE AND METHOD FOR STAPLING DOOR FAMES

Charles C. Vela, 510 E. Gladstone, Apt. 31, Azusa, Calif. 91702

Filed Jul. 3, 1978, Ser. No. 921,791
Int. Cl.³ B27F 7/14
U.S. Cl. 227—4 **15 Claims**



1. In a method of assembling a rectangular door including a pair of like parallel wooden side frame members and a like pair of wooden end frame members, the members all being rectangular in cross section and having like mitered ends, and arranged in quadrature to form a rectangular frame having opposite flat faces and adjacent abutting mitered ends, said method comprising

(A) applying at least one staple extending across adjacent mitered ends perpendicular to the plane of the frame,

(B) coating the opposite flat faces of the frame with glue or the like, and

(C) retaining flat panels on the opposite faces of the frame under pressure until the glue sets,

the improvements in combination with (B) and (C), aforesaid, wherein said method (A) comprises:

(a) supporting the members in planar quadrant relationships with their ends disposed between four v-blocks with the mitered ends spaced apart;

(b) moving the v-blocks relatively to force the ends together in abutting clamped relationship; and

(c) simultaneously driving at least one staple across each mitered joint substantially perpendicular to the plane of the members while so clamped.

4. Apparatus for stapling together the mitered ends of four wooden door frame members, such as employed adjacent the peripheral edges of cabinet doors and the like, and the opposite faces of which veneer panels are subsequently secured, comprising;

(a) means for supporting the frame members in planar quadrature relationship with the mitered ends spaced apart,

(b) means for moving the frame members relatively and forcing adjacent mitered ends into abutting and clamped relationship,

(c) a power operated staple gun adjacent each mitered joint affixed to the apparatus for driving at least one staple into the frame members across each mitered joint substantially perpendicular to the plane thereof while so clamped.

(d) means for substantially simultaneously operating the staple guns,

(e) said support and moving means comprising four v-blocks, one for each pair of adjacent frame members, each adapted to wedge the mitered end of one frame member against the mitered end of the adjacent frame member,

(f) two v-blocks being disposed in fixed position and the other two v-blocks being fixed to a rectilinearly movable carriage, and power means for moving the carriage toward and away from the fixed v-blocks, and

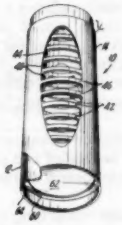
(g) wherein the staple driving means comprises a pair of opposed pneumatic staple guns for each corner of the frame members, one being in engagement therewith at one side thereof and the other being movable toward and away therefrom at the other side thereof, the latter adapted to engage the frame members during driving of the staples.

4,258,874

TWO PART CONTAINER HAVING ADJUSTABLE VENTS

George P. Webinger, and David Adamek, both of Minneapolis, Minn., assignors to Champion International Corporation, Stamford, Conn.

Filed Aug. 27, 1979, Ser. No. 70,243
Int. Cl.³ B65D 77/30, 47/12
U.S. Cl. 229—23 BT **7 Claims**



1. A two part paperboard container having adjustable vents, for holding a solid sublimable composition comprising:

an inner tubular member of generally truncated, conical configuration and having at least one die cut portion in the wall thereof, said inner tubular member being adapted to receive said solid composition;

means for sealing the upper end of said inner tubular member;

an outer tubular sleeve member of generally truncated, conical configuration, with the base of said outer sleeve member having a diameter larger than the diameter of the base of said inner member, said outer sleeve member having at least one die cut portion in the wall thereof, with said inner tubular member being disposed within said outer sleeve member and capable of rotation therein about the longitudinal axes of said members;

means for sealing the lower end of said container; and

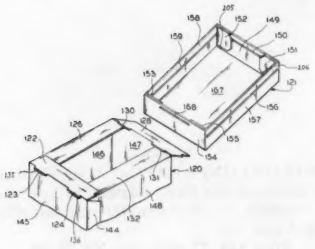
means for holding said inner tubular member within said outer sleeve member such that a frictional engagement is obtained between the outer surface of said inner tubular member and the inner surface of said outer sleeve member, whereby when said inner tubular member is rotated relative to said outer sleeve member, the respective die cuts of said members may be at least partially aligned such that the solid composition within said inner tubular member is exposed to the air thereby enabling the composition to sublime, wherein said means for holding said inner member within said outer sleeve member includes an annular support member formed from rolling the bottom edge of said outer sleeve member into an upturned U-shaped configuration such that the bottom edge of said inner tubular member rests on the upturned bottom edge of said outer sleeve member and is supported thereby.

4,258,875

CONTAINER ASSEMBLY FOR ICE-CREAM PRODUCTS

John M. Sykora, Chicago, Ill., assignor to Field Container Corp., Elk Grove Village, Ill.

Filed Apr. 23, 1979, Ser. No. 32,118
Int. Cl.³ B65D *45/18*
U.S. Cl. 229—41 B **25 Claims**



1. A knock-down container assembly for packaging and containing ice-cream products comprising:

a first one-piece blank defining a knock-down rectangular carton portion and a second one-piece blank defining a knock-down cover portion for detachably fixed attachment to said carton portion;

said one-piece knock-down carton portion comprising a front panel, a back panel, and two side panels interposed therebetween;

carton bottom formation means comprising flap means emanating from the bottom of said carton portion and which, when articulated, form a bottom panel on said carton portion;

carton closure means comprising a carton closure flap emanating from the top end of one of said panels of said carton portion, said carton closure flap being folded outwardly and downwardly from the top of said one panel from which it emanates whereby substantially the entirety of said carton closure flap lies outwardly of the outer surface of said one panel when said container is assembled;

said cover portion comprising a top panel and a plurality of cover side panels immediately attached to said top panel;

said cover portion when articulated having substantially the same shape as the top of said carton portion for telescopic receipt thereover and further being continuously leakproof and free of exposing apertures therewithin to preclude inadvertent leakage of said ice-cream products; and

cover closure means carried by said cover portion and comprising recess means formed in a side panel proximate said top panel of said cover portion,

said cover closure means positioned contiguous said outwardly folded panel of said carton portion upon telescopic fitment of said cover portion over said carton portion, said recess means being adapted to detachably and interlockingly receive said carton closure flap.

4,258,876

RECLOSABLE POUR OPENING STRUCTURE FOR A PACKAGING CONTAINER AND METHOD OF MAKING SAME

Billy Ljungcrantz, Chatel-St-Denis, Switzerland, assignor to Tetra Pak Developpement SA, Lausanne, Switzerland

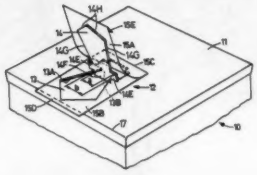
Filed Apr. 13, 1979, Ser. No. 29,875
Claims priority, application Switzerland, Apr. 17, 1978, 4092/78
Int. Cl.³ B65D *5/72, 43/16*
U.S. Cl. 229—43 **3 Claims**

1. In a panel of a packaging container a reclosable pour opening structure, comprising

an inner foil overlying an area of the panel and inseparably united with the panel over substantially the entire of said area,

a removable section provided within said area and comprising congruent panel and inner foil sections enclosed by an opening boundary line on the panel, said removable section being removable from the panel to provide a pour opening therein defined by the opening boundary line and being further comprised of a terminal portion and laterally projecting support tabs wherein the opening boundary line defines a throat in the pour opening, the width of the throat being smaller than the width of said terminal portion, and

a cover foil overlying the inner foil and being inseparably united with the inner foil within at least a portion of the zone enclosed by the opening boundary line and at a



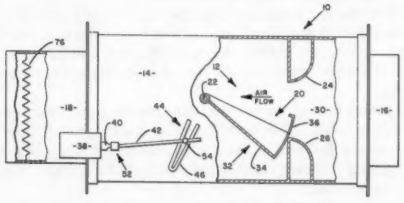
junction situated outside said zone, said inner foil and cover foil being devoid of union in the zone which is situated adjacent said junction, said cover foil being liftable from the inner foil outside of the zone, whereby lifting of the cover foil will cause the removable section to be lifted to a lifted position wherein the terminal portion of the removable sections enters the pour opening on the side of the throat remote from said junction and is supported by said support tabs on the top side of the panel adjacent the throat and lowering the cover foil to its original position will cause the terminal portion to be displaced through the throat into the region of the pour opening situated on the other side of the throat and will cause the removable section to reenter the pour opening to reclose it.

4,258,877

DAMPER BLADE CONTROL

Thomas M. White, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 30, 1979, Ser. No. 71,321
Int. Cl.³ F24F *7/06*
U.S. Cl. 236—49 **5 Claims**



1. A control for a supply air duct having a damper blade for regulating a flow of conditioned air through the supply air duct and an electric motor for moving the damper blade between minimum and maximum air flow positions, the control comprising;

thermostatic switch means for selectively connecting the electric motor to a source of electrical energy in response to changes in a sensed temperature;

maximum flow switch means disposed outside the supply air duct for disconnecting the electric motor from the source

of electrical energy when the damper blade reaches the maximum air flow position;

minimum flow switch means disposed outside the supply air duct for disconnecting the electric motor from the source of electrical energy when the damper blade reaches the minimum air flow position;

indicator means located outside the supply air duct and supported thereby for movement in response to movement of the damper blade for indicating the position thereof, the indicator means actuating the maximum flow switch means to disconnect the electric motor from the source of electrical energy when the damper blade reaches the maximum air flow position, and actuating the minimum flow switch means to disconnect the electric motor from the source of electrical energy when the damper blade reaches the minimum air flow position;

stationary bracket means located outside the supply air duct, fixed thereto, and including a surface spaced from the supply air duct and defining a groove;

first and second adjustable bracket means, wherein each adjustable bracket means includes means defining an opening positioned over the groove, and the minimum and maximum flow switch means are respectively secured to the first and second adjustable bracket means; and

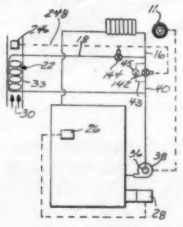
means extending through the openings defined by the adjustable bracket means and the groove defined by the stationary bracket means to adjustably secure the adjustable bracket means and the minimum and maximum flow switch means to the stationary bracket means, the position of the maximum and minimum flow switch means being adjustable to vary the maximum and minimum air flow positions of the damper blade.

4,258,878

FLUE GAS HEAT RECOVERY SYSTEM

Ides A. Van Pachtenbeke, 11301 Hensell Rd., Holly, Mich. 48442

Filed Jun. 1, 1979, Ser. No. 44,469
Int. Cl.[3] F24D *3/00*
U.S. Cl. 237—8 R **2 Claims**



2. A flue gas heat recovery system of the type for dwelling hot water heating system boilers which include a flue for exhausting combustion products and a circulating pump for transmitting hot water through conduits from the boiler to a room radiator where the hot water cools giving up heat to warm the room, the cooled water returning to a circulating pump inlet where the water is pumped to the boiler, the improvement comprising:

a heat exchanger in the flue in a path of the combustion products including a pair of parallel coiled conduits to receive the cooled water, the cooled water dividing at an inlet end to pass through the conduits and be warmed, the warmed water combining at an outlet end;

the combustion products warming the water, and the warmed water conducted to the circulating pump inlet;

means for by-passing the heat exchanger when there is insufficient extractable heat in the combustion products; said means for by-passing the heat exchanger comprising:

an inlet conduit interconnecting the cooled water conduit to a heat exchanger inlet;

an outlet conduit interconnecting the heat exchanger outlet to the pump inlet;

a by-pass line interconnecting the inlet and outlet conduits;

a first solenoid valve in the by-pass line;

a second solenoid valve in the first conduit;

a thermostat in the flue proximate the heat exchanger;

an electrical sensing line extending from the thermostat to the first and second solenoid valves; and

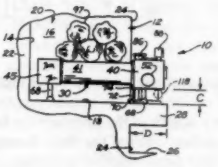
wherein when the temperature in the flue is below a selected level the thermostat opens the first solenoid valve and closes the second solenoid valve by-passing the heat exchanger, and when the temperature in the flue exceeds a selected level the thermostat closes the first solenoid valve and opens the second solenoid valve directing the cooled water through the heat exchanger.

4,258,879

ROOM HEATING DEVICE

Edmond P. Nischwitz, 2110 Iowa St., Peoria, Ill. 61604

Filed Feb. 6, 1979, Ser. No. 9,782
Int. Cl.[3] F24B *1/18*
U.S. Cl. 237—51 **19 Claims**



1. A room heating device (**10**) for placement in a fireplace (**12**), comprising:

a front duct (**40**);

a rear duct (**45**);

a plurality of ducts (**41–44**) interconnecting said front duct (**40**) and said read duct (**45**), said ducts (**40–45**) being arranged in a substantially horizontal manner;

conduit means (**50,52/100,102**) for defining a chamber (**48**) within said ducts (**40–45**) and externally of said conduit means (**50,52/100,102**) and for defining internal passage means (**54,56**) internally of said conduit means (**50,52/100,102**), said chamber (**48**) containing hot water and steam in response to a fire (**36**) in the fireplace (**12**); and

fan means (**38**) for forcing air to be heated through said internal passage means (**54,56**) and outwardly of the fireplace (**12**).

4,258,880

FIREPLACE HEATING SYSTEM WITH FINNED TUBES OR FIREPLACE GRATE

Ernest W. Williamson, Farmington, N. Mex., assignor to Arlon L. Stoker, Farmington, N. Mex., a part interest

Continuation-in-part of Ser. No. 695,538, Jun. 14, 1976, abandoned. This application Aug. 29, 1978, Ser. No. 937,858
Int. Cl.[3] F24D *3/00*
U.S. Cl. 237—56 **2 Claims**

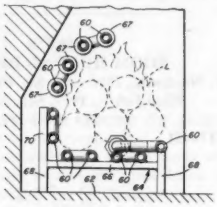
1. A fireplace heating system, comprising, in combination:

(a) fireplace furnace means arrangeable in a fireplace for heating a fluid passing through the furnace means;

(b) fluid storage means connected to the furnace means for feeding fluid to the furnace means and for providing a reservoir of heated fluid; and

(c) heat transfer means connected to the furnace means for receiving heated fluid from the furnace means and heating a space in which the heat transfer means is disposed, the

heat transfer means being a plurality of radiators connected to the fluid storage means for returning the fluid to the storage means and storing and recycling the fluid so as to form a closed fluid flow system, a pump being inserted between the heat transfer means and the fluid storage means for circulating fluid through the closed fluid flow system, with the storage means being provided with an inlet arranged for adding fluid to the system in order to make up losses, the heat transfer means including a like number of lines as radiators, the lines being connected in parallel with and bypassing the radiators for selectively permitting adjustment of fluid flow through the radiators, and a plurality of valves, each of the lines having one of the valves disposed therein for permitting adjustment of the amount of fluid passed through the radiators, the



furnace means including a continuous member bent into a plurality of connected, horizontally extending coils disposed above a hearth of the fireplace for forming a continuous tortuous flow path of the fluid through the fireplace, and the furnace means further including a stand supporting the coils, the stand including a substantially horizontal framework, legs supporting the framework, and a substantially vertically disposed element extending from the framework, with at least some of the coils being arranged extending horizontally on both the framework and along the vertically disposed element for partially surrounding on two sides a fire built on the coils and the remainder of the coils extending above and laterally from said vertically disposed element for partially covering the top of a fire built on the coils, the coils disposed forming a grate for the fire in the fireplace.

4,258,881

RIMMED SIMPLEX CARTON WITH TUCKED ENDS AND BLANK FOR FORMING SAME

Duane Mode, Minneapolis, and Daniel P. Dutcher, Woodbury, both of Minn., assignors to Champion International Corporation, Stamford, Conn.

Filed Nov. 5, 1979, Ser. No. 91,520
Int. Cl.[3] B65D 5/22
U.S. Cl. 229—34 HW **11 Claims**

1. A carton comprising

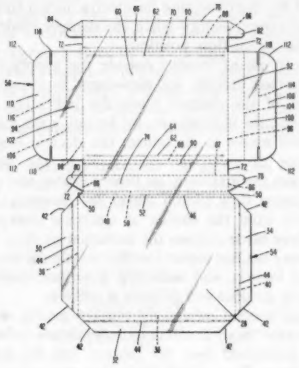
a base member;

first and second opposed wall members hingedly coupled along fold lines to one surface of said base member;

first and second cover flaps hingedly coupled along fold lines to said first and second wall members, respectively, at edges thereof remote from said base member;

first and second tuck flaps hingedly coupled along fold lines to said first and second cover flaps, respectively, at edges thereof remote from said first and second wall members;

third and fourth opposed wall members hingedly coupled to said one surface of said base member along fold lines, each of said third and fourth wall members having a tab extending outwardly from and hingedly coupled to each longitudinal end thereof along a fold line, said tabs being located adjacent longitudinal ends of said first and second wall members; and



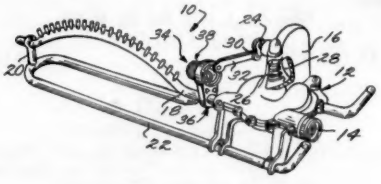
tuck slots located in said based member below said first and second wall members configured to receive said tuck flaps.

4,258,882

SPRINKLER WITH IMPROVED TWO-PIECE ADJUSTABLE DIAL MECHANISM

Jerry R. Hayes, Peoria, Ill., assignor to L. R. Nelson Corporation, Peoria, Ill.

Filed Nov. 23, 1979, Ser. No. 96,651
Int. Cl.[3] B05B 3/16
U.S. Cl. 239—73 **10 Claims**



1. In an oscillatory sprinkler of the type including a housing assembly having a water inlet for connection with a source of water under pressure, a shaft mounted in said housing assembly for rotation about a generally horizontally extending axis, a water discharge tube mounted in said housing assembly for oscillatory movement about an axis generally parallel to the axis of said shaft and in water pressure communicating relation to said water inlet, means within said housing assembly between said water inlet and said water discharge tube for rotating said shaft in response to the flow of water under pressure from said water inlet to said water discharge tube, a link operatively connected at one end to said shaft in motion transmitting relation thereto, and a two-piece adjustable dial assembly between said link and said water discharge tube for causing the rotational movement of said shaft to be transmitted through said link to said water discharge tube in any selected one of a plurality of different oscillatory cycles of movement, the improvement which comprises said two-piece adjustable dial assembly including

an arm member molded of plastic material having a mounting portion fixedly secured to said water discharge tube and a cylindrical portion having an axis disposed parallel to the oscillatory axis of said water discharge tube, and

a dial member molded of plastic material extending through

the cylindrical portion of said arm member and rotatable with respect thereto about the axis thereof,

said dial member having a knob portion at one side of said cylindrical portion manually engageable to effect rotation of said dial member, a pivotal connection with the other end of said link at the other side of said cylindrical portion and an elongated resilient cantilevered latching portion having a free end and an opposite end formed integrally with said dial member,

said cylindrical portion having notched surface means receiving the free end of said resilient latching portion for yieldingly retaining said dial member in any selected one of a plurality of positions of rotational movement corresponding to the selected oscillatory cycle of movement.

4,258,883

FUEL INJECTION NOZZLE

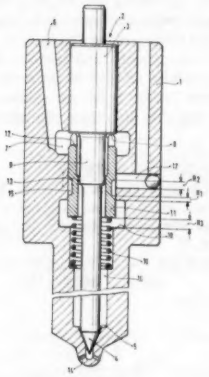
Karl Hofmann, Remseck, and Helmut Norberg, Stuttgart-Feuerbach, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 24, 1979, Ser. No. 42,261

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1978, 2833431

Int. Cl.³ F02M *45/08*

U.S. Cl. 239—124 **11 Claims**



1. Fuel injection nozzle for preliminary injection and primary injection in internal combustion engines, which comprises a valve body, a valve needle in said valve body, a control slide valve in said valve body surrounding said valve needle coaxial therewith and displaceable against the force of a spring by fuel fed under pressure, a duct in said valve body, said control slide valve arranged to displace, during the first segment of the feeding step, a preliminary injection quantity, and also to open up said duct after continuation of the stroke, to terminate the preliminary injection step, said control slide valve and a control surface on said valve needle are exposed to the fuel independently of each other, further wherein said duct comprises a relief duct which leads to a space in said valve body with at least intermittently lower pressure so that a temporary relief of the fuel injection pressure is effected.

4,258,884

NOZZLE EXTENSION SYSTEM FOR CAULKING GUN

David L. Rogers, 501 Munroe Cir., Glen Burnie, Md. 21061

Filed Dec. 20, 1978, Ser. No. 971,552

Int. Cl.³ B65D *35/38*

U.S. Cl. 239—390 **9 Claims**

1. A nozzle extension system for dispensing-type containers of material, comprising:

a plurality of conical-like nozzle extension means, each said conical-like nozzle means having a first end and a second end, said first end of each said conical-like nozzle means being the conical end and said second end of each said conical-like nozzle means being the open end of said conical-like nozzle means, said first end of each said conical-like nozzle means being slidably insertable into said second end of another said conical-like nozzle means; and

an external rib and an internal groove, said external rib being on the outside of each said conical-like nozzle extension means except one which is the last of said plurality of conical-like nozzle extension means, said internal groove being on the inside of each said conical-like nozzle extension means except one which is the first of said plurality of

conical-like extension, each said external rib and each said internal groove being integrally formed and monolithic with each said conical-like extension means to which applied, said external rib of one said conical-like extension means mating with said internal groove of another said conical-like extension means when said first end of one conical-like nozzle means is slidably inserted into said second end of another said conical-like nozzle means for removably connecting together said plurality of conical-like nozzle extensions when slidably and removably assembling said conical-like nozzle extensions to each other in a rigid manner.

4,258,885

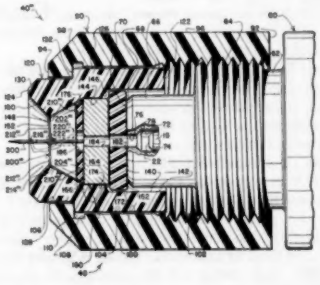
NOZZLE TIP AND METHOD OF MANUFACTURE

Thomas B. Legeza, 6122 St. Joseph Dr., Seven Hills, Ohio 44131

Filed Mar. 23, 1979, Ser. No. 22,957

Int. Cl.³ B05B *5/02;* **B23P** *15/00*

U.S. Cl. 239—707 **21 Claims**



1. A method of forming nozzle tip parts for a plural-part nozzle tip, comprising the steps of:

(a) forming a plurality of blanks from which nozzle tip parts will be formed, each blank including a forward wall, a rearward wall, and inner wall and outer walls, the step of forming blanks being carried out by sintering bodies of hard, wear-resistant material, the forward, rearward and outer walls being final-formed during the sintering process, the step of forming blanks further including machining at least a portion of the inner wall of each of the blanks to provide the nozzle tip parts with smooth, matingly engageable surface portions;

(b) forming a nozzle passage portion during the sintering process in the inner wall of at least a selected one of the blanks, the nozzle passage portion extending from the

rearward wall toward the forward wall and terminating in an end formation;

(c) machining at least one flat surface on the selected blank near the juncture of its forward wall and its inner wall, the plane of the flat surface being oriented to intersect the end formation of the nozzle passage portion;

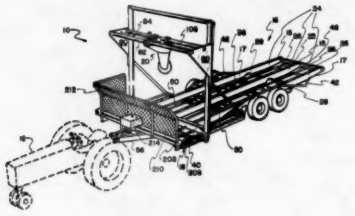
(d) the configuration of the end formation and the orientation of the plane of the flat surface being selected such that an orifice portion of desired configuration is formed at their juncture, and such that when the blanks are assembled with certain of their inner walls in mating engagement, a plural-part nozzle tip is provided having a nozzle passage of desired configuration extending therethrough from the rearward walls to the forward walls of the nozzle tip parts with the nozzle passage portions and the flat surfaces defining at least parts of the nozzle passage.

4,258,886

VARIABLE STACK FEEDER WITH HYDRAULIC CONTROL

Ezra C. Lundahl, Providence, Utah, and J. Gordon Wiser, Kirkland, Wash., assignors to Ezra C. Lundahl, Inc., Logan, Utah

Division of Ser. No. 917,997, Jun. 22, 1978, Pat. No. 4,163,524.
This application May 31, 1979, Ser. No. 44,282
Int. Cl.[3] B02C *18/26*
U.S. Cl. 241—101.7 **2 Claims**



1. A stack feeder comprising:

foliage cutting blade means;

first fluid driven power means carried by a vehicle for rotating the blade means to cut foliage from the face of a stack of foliage carried upon the vehicle;

second fluid driven power means carried by the vehicle for translating the blade means along a predetermined path directly adjacent the stack carried upon the vehicle;

valve means carried by the vehicle interposed between the two fluid driven power means;

means communicating effluent fluid from the first fluid driven power means to the valve means and thence to the second fluid driven power means whereby a decrease in or elimination of rotation of the blade means will correspondingly decrease or eliminate, respectively, fluid to the second fluid driven power means whereby the translation of the blade means will be correspondingly decreased or eliminated, respectively.

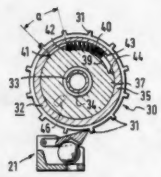
4,258,887

SAFETY BELT ROLL-UP DEVICE

Artur Föhl, R.R. #2, Schorndorf; Wolf-Dieter Hönl, Nutlangen, and Helmut Seifert, Schwäbisch Gmünd, all of Fed. Rep. of Germany, assignors to REPA Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Filed Jul. 23, 1979, Ser. No. 59,633
Int. Cl.[3] A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.4 A **9 Claims**

1. Safety belt roll-up device with belt shaft blocking means having a frame, a rotatable belt shaft on which a belt is wound mounted in the frame, blocking means with stationary locking teeth and a locking pawl attached to and rotatable with the belt shaft, said pawl being moveable to engage the stationary locking teeth for blocking the belt shaft, a control disk with a control teeth at its periphery for activating said blocking means to effect blocking of the belt shaft, said disk freely rotatable relative to the belt shaft but constrained to rotate with said belt shaft by said locking pawl, a release mechanism which is triggered when the vehicle exceeds a permissible acceleration or deceleration, for impeding rotation of the control disk by contact with said control teeth, a cam mounted coaxially with the control disk with the cam rotatable relative



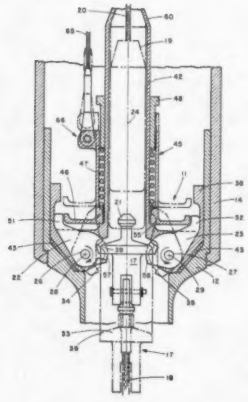
to the control disk in opposite directions of rotations, stop means to permit only a part turn of the cam in either direction of rotation relative to the control disk, said cam having an actuating dog for activating the blocking means by contacting said locking pawl when the cam and disk rotate at a speed different from the shaft causing the pawl to move into engagement with the locking teeth, and said dog held in a predetermined starting position relative to the control disk by at least one spring which can be deflected resiliently relative to the control disk in opposite directions of rotation.

4,258,888

QUICK RELEASING HIGH STRENGTH CONNECTOR

George W. Sawn, Clinton, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 24, 1979, Ser. No. 61,534
Int. Cl.[3] B64F *1/12*
U.S. Cl. 244—17.17 **12 Claims**



1. A coupling for use in landing and/or securing a movable object to or adjacent to a fixed or floating structure, comprising:

a cylindrical housing adapted to be secured to said movable object;

hauling means mounted on said structure and a hauling cable on said hauling means;

a fitting secured to the free end of said cable;

a messenger line having a cable break-away member secured thereto adapted to releasably grasp said fitting and draw said fitting axially into said housing;

actuable means secured in said housing adapted to be manipulated by said fitting from an inoperative position to a locked operative position upon said fitting being drawn into said housing by said messenger line;

releasable locking means in said housing adapted to lock said actuable means in the operative position after being manipulated by said fitting,

said actuable means in the operative position having means for stopping withdrawal of said fitting so that hauling forces on said hauling cable are transmitted to said housing; and

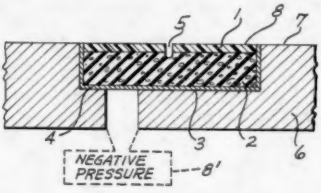
a release cable secured to said releasable locking means for releasing said actuable means upon a selected displacement of said releasable locking means whereupon said fitting is removed from said break-away member and released from said housing.

4,258,889

METHOD AND APPARATUS FOR LAMINAR FLOW CONTROL

James Hunt, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 29, 1979, Ser. No. 25,143
Int. Cl.³ B64C *21/06*
U.S. Cl. 244—207 **7 Claims**



1. A process for installing an insert in an exterior panel of a body comprising the steps of

first, selecting an insert which includes an inelastically compressible, air-permeable segment;

securing a relatively thin, non-porous strip to one surface thereof;

cutting a slit through said strip

then positioning said insert in a slot in said panel; then

compressing said insert; and then

providing a fluid flow path from said slit through said segment to a source of negative pressure;

so that said insert substantially fills said slot, an outer surface of said strip is level with an outer surface of said panel and said segment remains air-permeable.

4,258,890

TRIMMABLE FEEL SYSTEM FOR AIRCRAFT CONTROL

Gregory J. Korkosz, Malibu, Calif., assignor to Summa Corporation, Las Vegas, Nev.

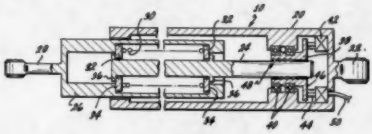
Filed Jul. 3, 1978, Ser. No. 921,203
Int. Cl.³ B64C *13/28*
U.S. Cl. 244—223 **5 Claims**

1. A trimmable feel system for use with an airframe-mounted control stick of a control system to apply a restoring force to the control stick when the control stick is moved relative to the airframe from a neutral position and to permit an operator to trim the control stick by selectively resetting the neutral position, comprising in combination:

a first member mechanically connected to the control stick so that movement of the control stick produces a corresponding simultaneous movement of said first member relative to the airframe;

a second member mounted on the airframe so that movement of said second member relative to the airframe from an equilibrium position is opposed by a restoring force urging said second member to return to the equilibrium position; and,

electric brake means for mechanically engaging and disengaging said first member and said second member, and responsive to an applied repetitive electric current of



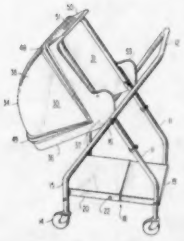
repetition rate less than a predetermined repetition rate to repetitively engage and disengage said first member and said second member at a rate equal to said repetition rate to damp the motion of said second member with respect to said first member, said repetitive electric current being selectively applied by the operator to trim the control stick, said electric brake means operative in the absence of said applied repetitive electric current to positively couple the movement of said second member with the movement of said first member.

4,258,891

COVER AND STAND FOR BAGS

James G. Mitchell, and Winalee G. Mitchell, both of Pine Lake Industrial Park, Dunbridge, Ohio 43414

Filed Sep. 26, 1978, Ser. No. 945,962
Int. Cl.³ A63B *55/08*
U.S. Cl. 248—98 **13 Claims**



1. A cover member adapted for pivoting movement between open and closed positions on a device for holding and supporting a bag with the mouth of the bag opening upwardly, said device having two leg members of inverted U-shape connected by pivot members for pivoting movement relative to one another, said bag being located between said leg members, said cover member comprising

(a) a substantially hood-shaped article having first and second side portions for extending beside the bag and below the mouth of the bag and a top portion connecting said side portions for extending over the mouth of the bag; and

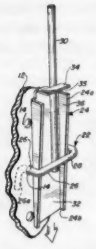
(b) means in each of said side portions for rotatably mounting said hood-shaped article on the pivot members connecting the leg members for movement between open and closed positions relative to the mouth of the bag.

4,258,892

PEG HOOK DISPLAY SUPPORTING APPARATUS

John C. Craine, Lombard, Ill., assignor to Advertising Metal Display Company, Chicago, Ill.

Filed Jul. 24, 1978, Ser. No. 927,495
Int. Cl.³ E04G *3/00*
U.S. Cl. 248—220.4 **15 Claims**



1. A peg hook and support bracket assembly for use with a perforated wall board comprising:

(a) a U-shaped peg hook having a cross-member, a pair of spaced apart L-shaped prongs extending at essentially right angles to said cross-member and adapted for insertion into a pair of wall board perforations and an item supporting rod element connected to and extending centrally from the cross-member; and

(b) a support bracket for cooperative interlocking engagement with the peg hook, said bracket comprising a generally rectangular base having a width to permit insertion between the prongs of the peg hook, pressure exerting means frictionally engageable with the cross-member and with a wall board surface when the peg hook is mounted thereon, and rod securing means extending from one end of the base for sliding and securing engagement with the rod element resisting rotational disengagement of the peg hook from a perforated wall board when the peg hook and bracket are mounted in the interlocked, frictionally secured position thereon.

4,258,893

SUPPORTING MATERIAL FOR COPYING

Michael L. Tolley, 1370 Broadway, W. Somerville, Mass. 02144

Filed Mar. 29, 1978, Ser. No. 891,075
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—441 B **7 Claims**

1. Apparatus for supporting input material to be copied on a formal sheet on a drafting board comprising,

said drafting board,

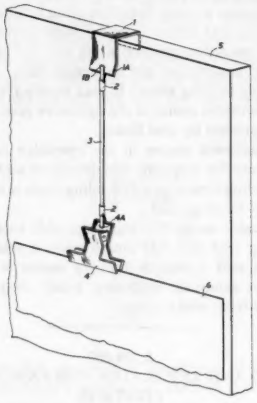
support means for engaging and slidably adjustable along the top edge of said drafting board,

fastening means for detachable engagement with the top edge of input material to be copied,

said support means for allowing said fastening means to be located at a point on said drafting board at substantially any distance between the side edges of said drafting board,

said fastening means resting against the front face of said drafting board which face is arranged to support a sheet for receiving graphical information related to said input material,

and twistable means intercoupling said support means and said fastening means depending from said support means for supporting said fastening means at a predetermined distance from the top edge of said drafting board while allowing said fastening means to be rotated so that input



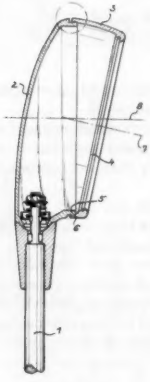
material fastened thereby may be readily positioned with either side exposed for copying.

4,258,894

REAR-VIEW MIRROR FOR AUTOMOTIVE VEHICLES

Fritz Niggemann, Essen, Fed. Rep. of Germany, assignor to Busch & Muller, Fed. Rep. of Germany

Filed Jan. 16, 1979, Ser. No. 3,938
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1978, MR 523; Sep. 19, 1978, 2840659
Int. Cl.³ A47G *1/24*
U.S. Cl. 248—483 **2 Claims**



1. A rear-view mirror for motorcycles and other automotive vehicles consisting of a rod-like mounting arm adapted to be rotationally secured to a vehicle, a fitting fixed on the free end of the mounting arm and having a concave upper surface with an annular shoulder for the reception of an annular shoulder of the mirror housing, a bolt of reduced cross-section as compared with the mounting arm extending centrally through the concave surface and provided on its upper end with a cup-shaped member for the reception of an encircling helical spring acting resiliently against a limiting stop nut-and-washer assembly screwed on the exteriorly threaded upper extremity of the bolt, a mirror housing formed as a hollow shell open toward a mirror-glass holder and said housing and holder being held together, and a mirror glass secured in a groove of the holder,

the housing having an annular surface bounded by a shoulder resting on the annular shoulder of the fitting and on which annular surface the holder rearward upper portion rests and the lower portion of the holder has a circumferential groove for the reception of a convex collar formed in the housing, the housing having its edge toward the holder inclined relative to the holder so that the inclination has a central horizontal axis intersecting the normal line of the mirror at an acute angle not less than 5° and not more than 25° and the mirror-glass holder being rotatable around the central axis of the housing which constitutes the only axis of rotation.

4,258,895

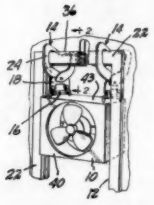
SUSPENSION MEANS FOR SMOKE EJECTORS

Jessie O. Rorie, 1016 W. Borley St., Mishawaka, Ind. 46544

Filed May 18, 1979, Ser. No. 40,323

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—544 **6 Claims**



1. A suspension means for smoke ejectors comprising, a handle, a pair of hooks pivoted to said handle on a common axis, each hook having a free end extending toward the other hook, spring means for biasing said hooks to a normal position with the free ends of the hooks adjacent each other, and means for pivotally attaching said handle to a smoke ejector.

4,258,896

DRIVER'S SEAT MOUNTING APPARATUS FOR A MOTOR VEHICLE

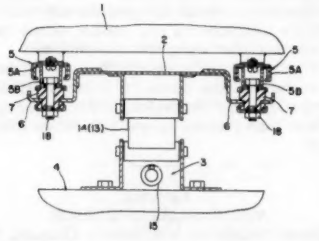
Keizo Kato, and Shigeru Kashihara, both of Sakai, Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Mar. 14, 1979, Ser. No. 20,374

Claims priority, application Japan, Aug. 31, 1978, 53/121088[U]

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—573 **3 Claims**



1. A driver's seat mounting apparatus for a motor vehicle comprising: a suspension mounted on an upper surface of a vehicle body and having a seat supporting member mounted on a top portion thereof, rail supporting members provided on right and left sides of the seat supporting member, and right and left rail members mounted on the rail supporting members for carrying a driver's seat shiftable forwardly and rearwardly, characterized in that said rail supporting members are disposed in a plane lower than the seat supporting member and shock absorbing rubber elements are interposed between the driver's seat and said rail supporting members.

4,258,897

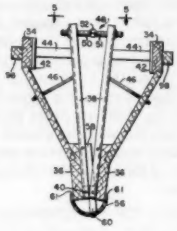
STRUCTURE FOR FORMING CONCRETE TROUGHS IN THE GROUND

Gene R. Stees, Rte. 3, Geneseo, Ill. 61254

Filed Oct. 15, 1979, Ser. No. 85,144

Int. Cl.³ E04H *7/18;* **B28B** *7/04, 7/30*

U.S. Cl. 249—11 **11 Claims**



1. A variable-angle Y-shaped mold structure for use in forming a V-shaped concrete trough in a larger, pre-formed V-shaped trench in the earth, comprising a pair of horizontally elongated side boards, each having upper and lower edges and opposite upright end edges, said boards being arranged with their lower edges spaced laterally apart to provide an elongated bottom opening; means hingedly connecting the boards together at their lower edges on a horizontal axis to enable the boards to move relative to each other and thus to provide a variable-angle Y; means cross-connecting the boards adjacent to their upper edges for selectively moving the boards about the hinge axis to establish a preselected angle of the Y; elongated gutter means attached to the boards at their lower edges to close the aforesaid bottom opening; and a pair of V-shaped end wall members received respectively at the opposite end edges of the boards.

4,258,898

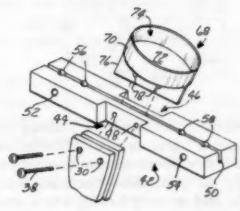
PLASTER SURFACE FINISHING DEVICE

Carmen J. Tuzzolino, 37009 Gary, Sterling Heights, Mich. 48077

Filed Sep. 17, 1979, Ser. No. 76,365

Int. Cl.³ B29C *1/16;* **B28B** *7/00*

U.S. Cl. 249—119 **3 Claims**



1. A device for finishing a wet plaster surface comprising: a finishing tool holder comprising a lower end including a handle engaging means; the holder broadening to a planar fan shape at an upper end thereof; an upper portion of the holder including the planar fan notched creating a step; a filler piece complementary to and substantially filling the notch; a threaded insert in the holder proximate a lower end of the notch; an aperture formed in the filler piece aligned with the threaded insert; a threaded fastener slidingly engaging the aperture in the filler piece and thread-

ingly engaging the threaded aperture to loosely attach the filler piece to the holer; and

a first pair of spaced apertures formed through the holder at the upper portion thereof, and a second pair of apertures formed through the filler aligned with the first pair of apertures;

a cross bar snugly retained between the holder and the filler piece;

a pair of recesses formed in the cross bar to receive the upper end of the holder and the filler piece;

a fourth pair of spaced apertures formed in the recess aligned with the first and second paris of apertures;

a pair of threaded fasteners slidingly engaging the aligned apertures, and a pair of nuts engaging the threaded fasteners to secure the cross bar to the holder;

a groove formed along an upper wall of the cross bar extending vertically below the third pair of apertures;

a fourth pair of spaced apertures formed through the cross bar parallel to the third apertures proximate the ends of the cross bar and crossing the groove; and

two pairs of vertical spaced apertures parallel and and central to the groove formed in the cross piece spaced i from the ends thereof.

4,258,899

ACTUATING APPARATUS FOR ADJUSTING A MOVABLE ELEMENT, PARTICULARLY THE CLOSURE MEMBER OF A VALVE

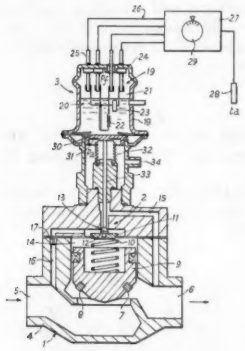
Zbigniew R. Huelle, Sonderborg, and Leif Nielsen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Nov. 1, 1978, Ser. No. 956,573

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1977, 2749252

Int. Cl.³ F16K *31/02*; F03G *7/06*

U.S. Cl. 251—11 **1 Claim**



1. A valve assembly, comprising a housing defining an inlet and an outlet and a valve opening therebetween, a closure element for said valve opening, said housing and said closure element forming an expansible operating chamber, bypass passage means in said housing having a first section extending from said inlet to said operating chamber and a second section extending from said operating chamber to said outlet, throttle means in said first section, pilot valve means including a valve element for modulatingly controlling fluid flow through said second section from said operating chamber to said outlet, said housing defining an expansible control chamber having a movable wall formed by a flat diaphragm, a liquid-vapor type filling for said control chamber biasing said diaphragm in an expanding direction, electric heating means in said chamber, electric contact means extending from outside said housing to the interior of said chamber connected to said heating means, pilot valve operating means connected to said diaphragm and said pilot valve means, and resilient biasing means in said operating chamber between said closure element and said pilot valve means to provide an oppositely acting counter force relative to the pressure in said control chamber to cause said pilot valve means and said closure element to assume intermediate positions of stable equilibrium corresponding to a range of pressures in said control chamber.

4,258,900

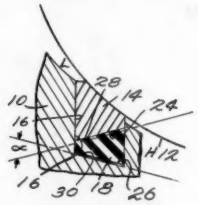
STRUCTURE MAINTAINING SEATS AGAINST BALL VALVES

Peter G. Kindersley, Glens Falls, N.Y., assignor to Kamyr Valves, Inc., Glens Falls, N.Y.

Filed May 21, 1979, Ser. No. 41,083

Int. Cl.³ F16K *5/06*

U.S. Cl. 251—172 **15 Claims**



1. A ball valve assembly comprising a valve body having a fluid conducting passageway therethrough, the passageway comprising a high pressure side; a ball valve mounted for rotation within the valve body to selectively allow or prevent the passage of fluid through the passageway; means defining an annular recess in said valve body adjacent said ball and in operative communication with said passageway; means defining a volume between said ball and body on the opposite side of said recess from said passageway, said volume comprising a low pressure side; an annular valve seat of rigid material disposed in said recess; and a solid elastic material annular body disposed in said recess to bias said valve seat into tight sealing engagement with said ball; wherein the assembly is operative over a wide range of temperatures, is solids proof, and can maintain large pressure differentials, and further comprises:

surface means, provided on facing surfaces of said valve body defining said recess and said valve seat, for defining a region between said valve body and said valve seat having a larger cross-sectional area at the high pressure side thereof than at the low pressure side thereof with a transition therebetween said surface means converging toward each other along said transition; and

wherein said solid elastic material body is disposed in said region and provides means for positively elastically engaging said surface means along said transition upon application of high pressure to said high pressure side of said region.

4,258,901

VALVE SEALING DEVICE

Sadazi Zinnai, Yokohama, and Takeshi Okayasu, Ichikawa, both of Japan, assignors to Tokyo Koso Kabushiki Kaisha, Saitama, Japan

Filed Jun. 11, 1979, Ser. No. 47,293

Claims priority, application Japan, Jan. 26, 1979, 54-7247

Int. Cl.³ F16K *25/00*

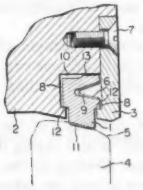
U.S. Cl. 251—173 **5 Claims**

1. A valve device comprising:

(a) a valve body having a fluid flow passage and an annular groove extending around and opening toward said flow passage, said valve body including at least one retainer shoulder in said annular groove;

(b) a valve pivotally mounted in said valve body for opening and closing said flow passage, and having a peripheral surface;

(c) an annular seal of synthetic resin disposed loosely in said annular groove and having at least one annular shoulder engageable with said retainer shoulder for the retention of said seal in said groove, said annular seal including an annular portion projecting radially inwardly into said flow passage for engagement with said peripheral surface of the valve upon closing thereof, and an annular peripheral contact surface facing radially outwardly toward a radial boundary surface of said annular groove, said annular seal having a first annular pressure chamber of a substantially V-shaped cross section opening at an axial surface thereof in fluid communication with said flow passage, and a second annular pressure chamber opening radially outwardly adjacent to said annular contact surface in fluid communication with said flow passage; and



(d) a resilient metal stiffener ring of a substantially V-shaped cross section disposed substantially complementarily in said first pressure chamber for reinforcing said annular seal, said stiffener ring including an annular flange interposed between said axial surface of the annular seal and an axial boundary surface of said annular groove, said first and second pressure chambers being selectively pressurizable upon closing of said valve for either radially pressing said contact surface and said annular portion of said seal respectively against said radial boundary surface and said peripheral surface of the valve or axially pressing said flange of the stiffener ring against said axial boundary surface.

4,258,902

STEERING VALVE WITH ANNULAR SEALING ELEMENT FOR RADIAL ANNULAR GAP

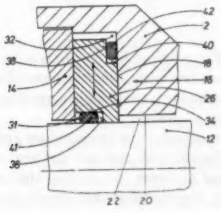
Karl-Heinz Liebert, Schwabisch Gmund, and Werner Tischer, Bobingen, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Sep. 28, 1979, Ser. No. 79,839

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1978, 2842734

Int. Cl.³ F16K *41/00*

U.S. Cl. 251—214 **10 Claims**



1. In a control valve assembly having a valve body (2) rotatably mounting at least one valve element from which a rotatable valve shaft (12) extends externally through a bore (20) formed in the valve body, said bore being dimensioned relative to the shaft to form an annular gap accommodating eccentric movement of the valve element and shaft relative to the valve body and bore, the improvement residing in a sealing gland (16) axially positioned between an axial abutment surface (18) of the valve body and said valve element for sealing said annular gap (22), comprising a rigid support ring (26) encircling said shaft and radially displaceable therewith within the valve body in response to said eccentric movement, said support ring being formed with a radially inner recess enclosing an annular chamber (31) opening onto the valve shaft and a radially outer recess enclosing an annular chamber (32) opening onto said abutment surface of the valve body, a radially prestressed sealing element (41) seated within the radially inner recess in engagement with the shaft, and an axially prestressed sealing element (42) seated within the radially outer recess in engagement with the axial abutment surface and said support ring being displaceable by said shaft without affecting the prestress of the sealing elements.

4,258,903

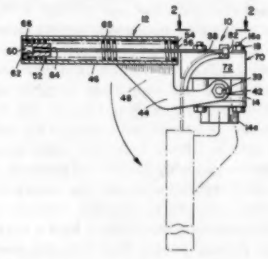
SPRING-LOADED VALVE ACTUATOR

Irving C. Stevenson, San Francisco, Calif., assignor to Thomas A. Short Co., Oakland, Calif.

Filed Mar. 17, 1980, Ser. No. 130,726

Int. Cl.³ F16K *5/00, 5/06*

U.S. Cl. 251—313 **5 Claims**



1. In combination with a valve having a housing adapted for connection to a fluid conduit with a valve member in said housing that blocks fluid flow in one position and allows full flow when rotated 90° about its axis, said valve member having a valve post aligned with said axis and extending radially from the valve member and the housing, an automatic shutoff actuator assembly comprising:

an elongated tubular handle adapted to be gripped by an operator;

a movable piston within said handle;

a cable attached at one end to said piston extending from said handle and means for anchoring said cable at its other end to said valve housing;

a coiled spring within said handle partially compressed between said piston and stop means at one end of said handle so as to maintain tension in said cable;

an arcuate guide on said housing positioned to bear against one side of said cable and thereby maintain the cable in alignment with the longitudinal axis of said handle as it is moved from the valve closed to the valve open position; and a handle arm having one end fixed to said handle and its other end fixed to said valve post of said rotary valve member; whereby when said handle is in the closed position, the initial spring compression producing cable tension tends to keep the valve closed, and when the handle is moved to the open position, spring compression and cable tension is increased so that upon release, the handle will be forcefully biased to its valve closed position.

4,258,904

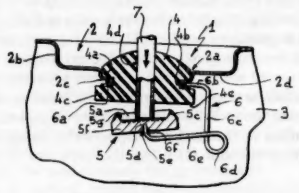
VALVES FOR CLOSING CONTAINERS UNDER FLUID PRESSURE

Gerard A. Scremin, Lyons, and Nino F. Urbano, Oullins, both of France, assignors to Application des Gaz, Paris, France

Continuation-in-part of Ser. No. 868,153, Jan. 9, 1978, abandoned. This application Dec. 26, 1979, Ser. No. 107,243

Int. Cl.[3] **F16K** *31/00*

U.S. Cl. 251—339 **8 Claims**



1. A valve device for mounting in an aperture through a supporting member, the valve device being openable for the outward withdrawal of fluid under pressure by insertion of a tube inwardly therethrough, the valve device comprising:

a seal member closing said aperture and having an axial passage extending therethrough, and having an inwardly facing seat extending around said passage;

a moveable valve member having one face disposed to lie against said seat and close said passage in fluid-tight engagement and having an opposite surface including a blind hole extending therethrough toward said one face;

a spring having a first end portion fixed with respect to said seal member and said supporting member and having a second end portion extending toward said axial passage concentrically therewith and engaging the valve member by entry into said blind hole, the spring comprising the sole means to yieldably locate and position and bias the valve member against said seat, the spring between said end portions comprising a single wire of substantially circular cross-section including at least a curved intermediate wire portion joining said first end portion to said second end portion, the spring being yieldable about said intermediate portion to permit displacement of the valve member both inwardly away from the seat and also laterally in any radial direction with respect to said passage when a tube is inserted through the passage.

4,258,905

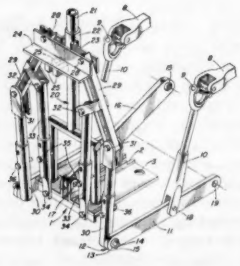
POST-STAKE DRIVER

Joseph Brabander, Rte. 1, Box 33, Deer Creek, Okla. 74636

Filed Nov. 9, 1979, Ser. No. 93,144

Int. Cl.[3] **E21B** *19/00*

U.S. Cl. 254—29 R **6 Claims**



1. An apparatus for driving an upright which is operable in combination with a tractor equipped with a three point hitch system comprising:

(a) a base rigidly mountable on the rear of the tractor chassis and ridigly braceable to the stationary point of the three point hitch system,

(b) rigidly mounted in an upright position on the base, a frame having a vertical member,

(c) a holding assembly having an urging means for urging the upright downward and a tracking member for tracking along the vertical member movably mounted on the vertical member,

(d) a pivot arm on each side of the holding assembly pivotly connected on one end thereto and on the other end to one end of a push lever,

(e) the opposite end of each push lever pivotly connectable to the outer ends of the lift lever arm of the three point hitch system,

(f) at a point along the length of each pivot arm a pivot connection connecting one end of a holding arm, and

(g) the other end of each holding arm pivotly connected to the base,

such that upward movement of the lift lever arms urges the push levers upward, in turn urging the connecting ends of the pivot arms upward, pivoting at the pivot connections of the holding arms, thus urging the other ends of the pivot arms downward along with the holding assembly and urging means along the vertical member, while the holding arm pivot outward on the pivot connections to the base.

4,258,906

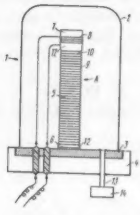
DEVICE FOR GRADIENT HEATING OF WIRE

Endel T. Lippmaa, ulitsa Sybra, 14, kv. 2; Vambola I. Roose, ulitsa Ryannaku, 3, kv. 4, both of, Tallin, and Tynu K. Karu, Okhtu tee, 9, Keila, all of U.S.S.R.

Filed Feb. 12, 1979, Ser. No. 11,547

Int. Cl.[3] **C21D** *1/74, 9/52;* **F27B** *5/04*

U.S. Cl. 266—250 **5 Claims**



1. A device for gradient heating of a wire comprising:

a vacuum chamber with a thermostatically regulated base,

means for producing a temperature gradient arranged within said vacuum chamber,

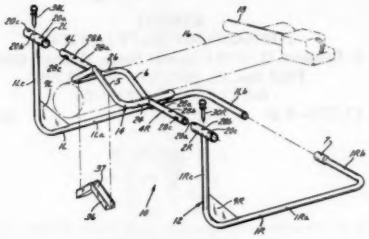
said means for producing a temperature gradient incorporating a metallic cylinder, a heater for heating one end of said cylinder and a cooler for cooling the other end thereof, said cooler representing said thermostatically regulated base and

the surface of said metallic cylinder being furnished with transverse grooves for locating therein a wire being heated and with a longitudinal groove for passing the wire being heated from one transverse groove into an other.

4,258,907
WOOD BUCK

Russell J. Roberts, Oconto Falls, and Kenneth F. Leisner, Oconto, both of Wis., assignors to Gem Manufacturing, Inc., Oconto, Wis.

Filed Feb. 19, 1980, Ser. No. 122,712
Int. Cl.[3] B23Q *1/04*
U.S. Cl. 269—69 14 Claims

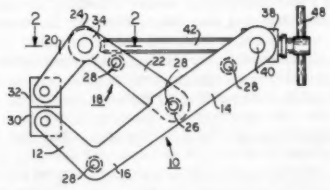


1. A wood buck comprising, in combination:
a base;
a log holder;
and mounting means for mounting said log holder on said base;
said log holder comprising a pair of upper and lower members which are horizontally and vertically spaced apart from each other and define a log-receiving opening wherein a log is supportable in cantilevered relationship by said members, said mounting means including pivotally interengageable means on said base and on said log holder and forming an axis transverse to a log in said holder, and means for preventing pivotal movement of said log holder relative to said base.

4,258,908
CHELA-FORM CLAMP

Melvin J. Goff, and Gerald W. Goff, both of Kalamazoo, Mich., assignors to Continental Pump, Inc., Portage, Mich.

Filed May 17, 1979, Ser. No. 40,240
Int. Cl.[3] B25B *1/12*
U.S. Cl. 269—239 1 Claim

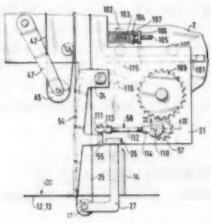


1. In a Chela-form clamp comprising
an L-shaped member having a short leg and a long leg joined by a knee,
a second L-shaped member having a short leg and a leg of intermediate length joined by a knee, said leg of intermediate length being journaled in the mid-portion of said long leg, and said L-shaped legs comprising spaced-apart complementary members joined together by spacers,
apposed clamping faces at the ends of said short legs,
a first block journaled in the complementary members at the knee of said second L-shaped leg,
a second block journaled in the complementary members at the end of said long leg,
an elongate member passing through said second block and having thrust contact with said first block,
thread means operative when said member is turned to place thrust on said first block and to force the first and second blocks apart,
the combination in which said first block has a radial bore having a conical bottom adapted to receive the thrust end of said elongate member located well past the journal axis,
a steel ball disposed in said bore which has circle contact with the conical bottom of said bore,
the thrust end of said elongate member has an axial conical depression therein having circle contact with said ball, and said thrust end is rotatably anchored in said axial bore by means located in front of the journal axis, in which said elongate member has a cylindrical portion closely fitting said bore and rotatable therein, in which the circle of contact between said steel ball and the conical bottom of said bore is parallel with the circle of contact between said ball and the conical depression at the thrust end of said elongate member, and in which the parallel circles of contact are past the journal axis.

4,258,909
APPARATUS FOR CONVERTING A STREAM OF PARTLY OVERLAPPING SHEETS INTO A ROW OF OVERLAPPING SHEETS

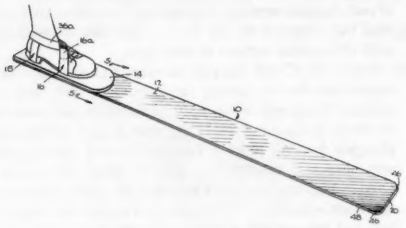
Hans Müller, Zofingen, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

Filed Feb. 23, 1978, Ser. No. 880,604
Claims priority, application Switzerland, Feb. 25, 1977, 2363/77
Int. Cl.[3] B65H *29/44*
U.S. Cl. 271—181 6 Claims



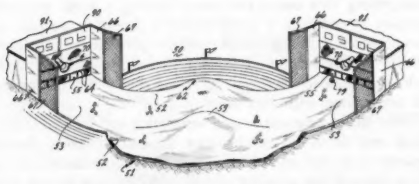
1. Apparatus for converting a stream of partly overlapping sheets into a row of substantially fully overlapping sheets, comprising first conveyor means having a sheet supporting surface movable in a predetermined direction; second conveyor means defining a predetermined path for the transport of sheets which form said stream to said supporting surface whereby such sheets form a growing row which accumulates on and moves with said supporting surface in said direction; pusher means adjacent to said supporting surface and movable back and forth in and counter to said direction between spaced-apart first and second end positions to move the rearmost sheet of the growing row in said direction during movement to said first end position and to provide room for movement of the foremost sheet of said stream toward said supporting surface in said second end position, said pusher means extending forwardly of said path, as considered in said direction, in said first end position; means for moving said pusher means between said end positions; and means for simultaneously shifting the end positions of said pusher means in and counter to said direction, including a shaft extending substantially transversely of said path and defining a pivot axis for said pusher means, and means for changing the position of said pivot axis including eccentric means provided on said shaft and bearing means rotatably supporting said eccentric means.

4,258,910
FLEXIBLE FOOT EXTENDER
John R. Carter, 3 Myrtle Ave., North Plainfield, N.J. 07060
Filed Sep. 25, 1978, Ser. No. 945,329
Int. Cl.³ A63B *71/00*
U.S. Cl. 272—1 R **18 Claims**



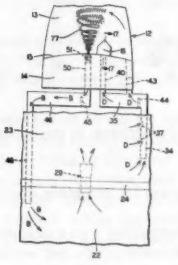
1. A flexible extender adapted to being worn on the foot and tending to provide magnification of the foot's movement and power and particularly utilizable for creative encounters between the wearers, for dance or exercise, as an educational implement, as a creative plaything, and as a novelty item, said extender comprising an elongated, essentially flat base portion with a substantially flat forward end and having a top and opposed ends and means adjacent one end of the base portion for securing the extender to the foot of the wearer, said base portion being flexible substantially along its entire length in opposed directions in a plane extending generally perpendicular to the plane of top of the base portion, said base portion being capable of being flexed in each of said opposed directions, said base portion being made of a material such that said base portion can be repeatedly flexed without fracturing, said base portion having a length, being of a thickness and being sufficiently flexible such that when the base portion is supported at said one end thereof generally in a horizontal plane, the base portion extending from said one end flexes under its own weight and slopes downwardly and in such supported position the forward end may be flexed substantially vertically.

4,258,911
SKATEBOARD ARENA
Alexander J. Alexander, 22052 Arcos, Mission Viejo, Calif. 92691
Filed Dec. 3, 1979, Ser. No. 99,591
Int. Cl.³ A63J *3/00*
U.S. Cl. 272—3 **10 Claims**



8. A sports arena comprising:
an oval shaped bowl having relatively steep upwardly curved sidewalls and having an elongated gradually inclined ramp formed on each longitudinal end thereof;
an oval shaped mound integrally formed on the center of the floor of the bowl and having an elevation which is less than the elevation of the longitudinal ends of said bowl;
the curved sidewall portions opposite said center mound being higher in elevation than the longitudinal ends of said bowl and having inwardly curved upper edge portions;
a plurality of starting gates for game players disposed at each longitudinal end of said bowl;
a building structure at each longitudinal end of said bowl;
said building structure including an overhanging front portion located above said starting gates; and
a truncated cone shaped ball pit mounted on the overhanging front portion of said building structure at each longitudinal end of said bowl;
said ball pit disposed with its longitudinal axis substantially parallel with the sloping surface of the ramp therebelow.

4,258,912
TORNADO NOVELTY DEVICE
Ray R. Reighart, II, 4778 Hillcrest North, Hilliard, Ohio 43026
Filed Jan. 21, 1980, Ser. No. 113,708
Int. Cl.³ A63J *33/42, 5/00*
U.S. Cl. 272—8 D **18 Claims**

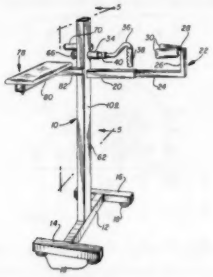


1. A novelty device which when inverted and vigorously shaken and then replaced right side up produces a simulated tornado in a liquid-filled chamber, said device including:
(a) a first chamber containing a predetermined quantity of liquid;
(b) a second chamber communicating with the first chamber;
(c) one-way valve means providing the communication between the first and second chambers and permitting the flow of liquid from the first chamber into the second chamber when the device is placed in an inverted position and preventing the return of the liquid from the second chamber back into the first chamber when the device is replaced right side up;
(d) a vortex chamber filled with a liquid providing the liquid-filled chamber in which the simulated tornado is produced;
(e) liquid inlet passage means extending between the second chamber and the vortex chamber for supplying liquid under pressure from said second chamber into the vortex chamber after the device is returned from its inverted position to an upright position; and
(f) drain means extending between the vortex chamber and the first chamber for draining liquid from said vortex chamber into the first chamber when the device is replaced in an upright position, said liquid being forced by a siphonal action from the second chamber through the inlet passage means and into the vortex chamber in a tangential direction to form a vortex which simulates a tornado in the liquid in the vortex chamber in communication with the drain means.

4,258,913
FOREARM EXERCISER
Jerry D. Brentham, P.O. Box 599, Belton, Tex. 76513
Filed Apr. 9, 1979, Ser. No. 28,159
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—67 **11 Claims**

1. A forearm exercising device comprising: a support frame; a shaft rotatably supported on said support frame; a grip secured to one end of said shaft; a crank arm secured to the opposite end of said shaft; actuated means operably secured to

said shaft adapted to control the rate of movement of said grip and crank arm such that as a user grips the grip with a hand, the rate of movement of the hand is controlled as the user



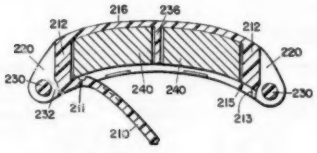
rotates the hand through supination and pronation and as a user grips the crank arm the rate of movement is controlled through palmarflexion and dorsiflexion.

4,258,914

ISOKINESTHETIC DEVICE

Ronald P. Lalli, 515 Forest Hills Rd., Springfield, Mass. 01128

Filed Dec. 26, 1979, Ser. No. 107,061
Int. Cl.[3] A63B *21/18*
U.S. Cl. 272—71 **1 Claim**



1. A swimmer's training aid for application to a swimmer's lower arm or leg to provide an increased awareness of propulsion effect comprising:

a body element securable to the swimmer's body and defining an interior pocket having interior side walls and having an arcuate configuration conforming to a swimmer's torso;

a pair of partition walls within the interior pocket extendable in planes normal to each other, each being of a suitable length so as to extend to a respective interior side wall of the body for defining a quartet of quadrants;

a closure interengageable with the body element for enclosing the pocket;

a plurality of weights selectively receivable in nesting relationship within the pocket in the quartet of quadrants; and

means for slidably and adjustably supporting the body on the arm or leg of the user.

4,258,915

SELF-LOCKING PORTABLE SUPPORT STRUCTURE

Hans Sellge, Jr., San Francisco, and Tom M. Browne, Berkeley, both of Calif.

Filed Jun. 4, 1979, Ser. No. 45,057
Int. Cl.[3] A63B *7/08*
U.S. Cl. 272—111 **16 Claims**

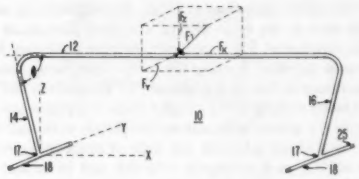
1. A ballet barre comprising:

a horizontal cross member for supporting a user during an exercise;

only a single upright support connected at each end of said horizontal cross member at an angle ϕ thereto:

a floor support connected at the distal end of each of said upright supports;

joint connection means between said horizontal member and each upright support such that the angle ϕ therebetween is chosen to transmit forces from the horizontal member



through said upright supports such that all forces are resolved into only one substantially vertical-resulting force at the respective distal end of each of said upright supports to reduce any tipping effect caused by the forces produced by the user during use; and

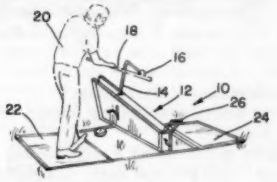
wherein said angle ϕ is chosen to be less than 90° such that the distal ends of said upright supports point inwardly towards each other.

4,258,916

BATTING PRACTICE STAND

Billy G. Beam, Rte. 1, Box 39A, Mulberry, Ark. 72947

Filed Jul. 24, 1979, Ser. No. 60,009
Int. Cl.[3] A63B *69/40*
U.S. Cl. 273—26 R **8 Claims**



1. A batting practice device comprising a batting arm carrying a target simulating a baseball or soft ball, and means for hingedly mounting the batting arm in an upright frame for swinging movement in a vertical plane when the target is struck by a baseball bat in the hands of a batter, a portable box-like frame having parallel sides and a bottom in which the batting arm is hingedly mounted for swinging movement in a vertical plane parallel to the upright sides of the frame and means carried by the frame for limiting the swinging movement of the batter arm in either direction, wherein the frame includes laterally disposed outrigger portions for supporting the frame in upright position with the sides in parallel vertical planes and the batting arm swinging in a vertical plane intermediate the sides.

4,258,917

ROTOCASTING PROCESS FOR PRODUCING RUBBERY REINFORCED ARTICLES

Walter T. Murphy, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 3, 1979, Ser. No. 99,292
Int. Cl.[3] A63B *41/00*; B28C *5/04*
U.S. Cl. 273—65 ED **21 Claims**

1. A process for making reinforced rubbery sport balls and play balls by rotational casting comprising placing in the two

halves of a rotary mold two preshrunk and preformed half shells of nonwoven fabric in such a manner as to line the entire inner surface, said shells being of such size as to provide sufficient area at the edge thereof to bind one nonwoven shell to the other, placing in the lower half of the mold a liquid polymer rotocasting composition containing an epoxy resin, a liquid carboxyl-terminated polymer, an amine, a dihydric compound, and a plasticizer, said composition having a viscosity of less than 2500 centipoises at 75° C., placing between said shells in the area at the edge thereof a strip of film made from an amine-terminated liquid polymer, fastening the two halves of the mold together, heating the mold while being rotated to a temperature in the range of about 110° C. to about 180° C., said mold being rotated about a major axis and a minor axis simultaneously for a time sufficient to completely cure said rotocasting composition whereby the heat of rotocasting melts said strip of film to a polymeric adhesive and cures and sets the same binding said shells together, and thereafter cooling said mold and removing the ball therefrom.

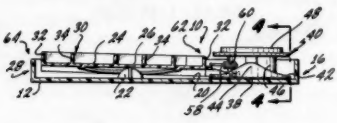
16. The product produced by the process of claim 1.

4,258,918

MAZE GAME HAVING SINGLE CONTROL

Toru Nishimiya, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Nov. 23, 1979, Ser. No. 96,698
Claims priority, application Japan, Feb. 10, 1979, 54-16158
Int. Cl.³ A63F *7/00, 7/38*
U.S. Cl. 273—110 **10 Claims**



1. A maze game which comprises:

a housing having an upstanding fulcrum means located on said housing;

a platform means having a maze located on a viewable surface of said platform means, said platform means positioned in said housing above said fulcrum means so as to rest on said fulcrum means and be tiltable 360 degrees about said fulcrum means, said platform means including a cam follower means located near one edge of said platform;

a single cam rotatably mounted on said housing and positioned to be capable of interacting with said cam follower means such that said platform means including said maze is able to be tilted 360 degrees in response to rotation of said single cam means;

an object located within said maze and capable of moving within said maze in response to tilting of said platform means.

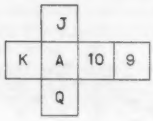
4,258,919

FIVE-SUIT GAME DICE

Maurizio Martelli, Viale Abruzzi, 91, Milan, Italy

Filed Apr. 26, 1979, Ser. No. 33,542
Claims priority, application Italy, Apr. 3, 1978, 21365/78[U]
Int. Cl.³ A63F *9/04*
U.S. Cl. 273—146 **3 Claims**

1. A set of five game dice, the faces of which have the reproduction of six different symbols arranged according to the usual progression of standard international playing-cards, characterized in that on the various dice the symbols have in connection with the faces of the same arrangement, but a different combination of five different suits, except for the



	9	10	J	Q	K	A
1°	F	C	AM	D	P	F
2°	AM	D	P	F	C	AM
3°	P	F	C	AM	D	P
4°	C	AM	D	P	F	C
5°	D	P	F	C	AM	D

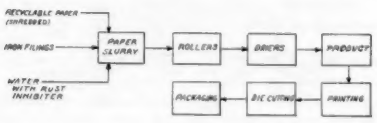
symbols of extreme value, which in each die are of a same suit, but different for each of the five dice.

4,258,920

MAGNETIC JIGSAW PUZZLE

Don C. Waldron, and Phanoy Waldron, both of Rt. 4, Box 985, Port Angeles, Wash. 98362

Filed Jul. 31, 1978, Ser. No. 929,218
Int. Cl.³ A63F *9/10*
U.S. Cl. 273—157 R **2 Claims**



1. A jigsaw puzzle comprising a board having a playing surface and a set of a plurality of interfitting play pieces, with one of the two of said board and said set of pieces each being of magnetized material and with the other being formed of a metallic material that detachably adheres to a magnetized material, in which

the magnetized material is formed of a sheet material comprised of a dried water slurry of mixed shredded paper, and magnetic particles which slurry has been rolled into a sheet and with

the magnetic particles being formed of magnetic iron filings, in which

a rust inhibitor in the form of a zinc salt has been added to the slurry.

4,258,921

GOLF BALL

Joseph C. Worst, 3606 Nandina Dr., Louisville, Ky. 40222

Filed Jan. 4, 1980, Ser. No. 109,645
Int. Cl.³ A63B *37/14, 69/36*
U.S. Cl. 273—232 **9 Claims**

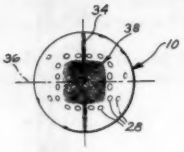
1. A golf ball in the shape of a sphere having a multiplicity of spaced apart dimples distributed generally uniformally over the outer surface thereof and having a continuous spherical surface between said dimples, the invention comprising:

a. at least one undimpled patch on the outer surface of the ball for use as a smooth putter-contacting surface;

b. the extent of the undimpled patch ranging from a first minimum size and shape corresponding to the undimpled area achieved by removing four of the dimples on the ball,

said four dimples being arranged generally in the pattern of a square;

c. a second maximum area corresponding to the smooth undimpled area achieved by removing sixteen of the dimples on the ball, said sixteen dimples being arranged generally in the shape of a square, whereby the golf ball exhibits more accurate directional control during putting without significantly detracting from hang time of the ball in flight.

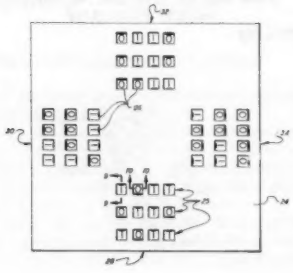


4,258,922

COMPUTER MATH GAME

Alfred E. Landry, 52 Bayberry Cir., Liverpool, N.Y. 13088

Filed Sep. 14, 1978, Ser. No. 942,330
Int. Cl.³ A63F 3/00; G09B 19/02
U.S. Cl. 273—302 **4 Claims**



1. An instructional game involving logic functions performed on binary numeral sequences comprising the steps of:

(a) selection by each of two or more players from a randomly oriented deck of data cards printed on one side only, some with a "0" and some with a "1", the deck being shuffled and placed face down, of at least one sequence of binary digits which is recorded by placing the selected cards face up in the sequence selected;

(b) selection by random chance means of at least one instruction from a plurality of different instructions for an operation to be performed on said digits, said operation being a logic function of a type commonly carried out by a digital computer upon a digit sequence;

(c) drawing from a second deck of cards, each printed with a "0" on one side and a "1" on the other, a plurality of cards and placing said cards in proper sequence and with the proper side up to represent said sequence of digits after said operation is performed; and

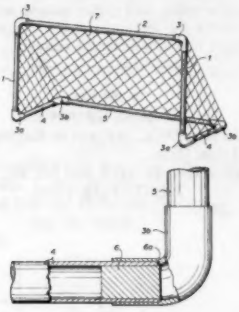
(d) repeating at least two of the foregoing steps one or more times in accordance with preselected game rules until the game is concluded and a winner selected as determined by said rules.

4,258,923

FOOTBALL GOAL STRUCTURE

Fushi Senoh, 2-31-13, Shinmachi, Setagaya-ku, Tokyo, Japan

Filed May 7, 1979, Ser. No. 36,419
Int. Cl.³ A63B 71/00
U.S. Cl. 273—398 **6 Claims**



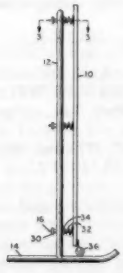
1. A football goal structure with weight means, comprising a synthetic resin framework including a pair of spaced and parallel upright tubular frame members, a horizontal upper front tubular frame member connected at the opposite ends to the upper ends of said upright tubular frame members, a pair of shorter bottom tubular frame members connected each at one ends to the lower ends of said upright tubular frame members and extending rearwardly of the upright tubular frame members, and a rear bottom tubular frame member connected at the opposite ends to the other ends of said shorter bottom tubular frame members; a net stretched across and secured to said framework; and flanged weight means fitted within one of the adjacent ends of one of said upright tubular frame members and associated shorter bottom tubular frame member and one of the adjacent ends of one of said shorter bottom tubular members and associated rear bottom tubular frame member, respectively, said flanged weight means having the diameter substantially corresponding to the inner diameter of the tubular frame member in which the weight means is fitted and the diameter of the flange substantially corresponding to the outer diameter of the associated tubular frame member.

4,258,924

SOCCER TRAINING APPARATUS

John L. Ketchum, 3200 SW. 94th Pl., Miami, Fla. 33165

Filed Jul. 30, 1979, Ser. No. 61,853
Int. Cl.³ A63B 71/02, 63/00, 69/00
U.S. Cl. 273—411 **2 Claims**



1. A soccer game training device comprising a horizontal sled means, a vertical frame ridigly secured on said sled means, a wall, means for yiedably securing said wall on said frame and said sled means comprising roller means mounted on the bot-

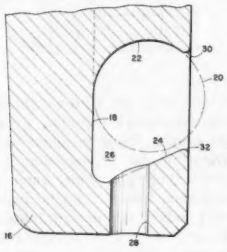
tom of said yiedable wall and riding on said sled means, ball socket means secured to the back of said wall, threaded bolt means having ball head means movably mounted in said socket means, said bolt means extending through apertures in said vertical frame, compressible spring means about said bolt means between said socket means and said vertical frame, and nut means on said threaded bolt means beyond said frame adjustably compressing said spring means, whereby said wall may deflect under the impact of a moving soccer ball to retrieve the soccer ball at a different velocity.

4,258,925

O-RING GROOVE

Glen Guyton, Tulsa, Okla., assignor to Guyton Manufacturing Company, Tulsa, Okla.

Filed Oct. 13, 1978, Ser. No. 951,178
Int. Cl.³ F16K *15/03*
U.S. Cl. 277—29 **2 Claims**



1. An O-ring sealing means interposed between a pair of abutting surfaces and comprising an annular groove provided in one of said surface for receiving an O-ring sealing means therein and defined in cross section by an arcuate portion conterminous with an adjacent first flat portion which is conterminous with an adjacent tapered portion which is conterminous with an adjacent second flat portions, said second flat portions and said arcuate portion being disposed diameterically opposite one another in relation to the center of the annular groove and being disposed substantially parallel with respect to one another, said tapered portion providing an area of compression for the O-ring sealing means when said O-ring sealing means is engaged with the other of said abutting surfaces, the arcuate portion being of a configuration corresponding to the cross-sectional configuration of the O-ring sealing means for snugly receiving one side of the O-ring sealing means thereagainst, and including at least one relief portion disposed in said second flat portion for providing communication with the compression area of the groove for facilitating compression of the O-ring sealing means into the compression are during a sealing position of the O-ring sealing means against the second of said abutting surfaces.

4,258,926

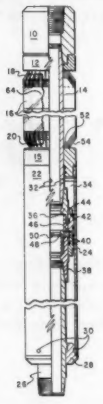
HIGH TEMPERATURE WELL PACKER

Thomas E. Upton, Deer Park, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jun. 13, 1979, Ser. No. 47,971
Int. Cl.³ F16J *15/20*
U.S. Cl. 277—116.4 **14 Claims**

1. In a well tool having a mandrel assembly with means thereon to mount a tubular packing element between upper and lower support members and means to telescopically compress said packing element upon operation of said well tool, an improved tubular packing element comprising:

a tubular packing element including a quantity of loosely packed, heat resistant, compressible packing material of a composition which is substantially inorganic and contained within a mesh enclosure; said packing element being adapted to be longitudinally compressed and radially expanded relative to said mandrel assembly in order



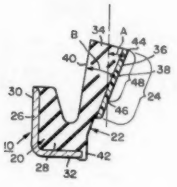
to establish a fluid seal between said mandrel assembly and a well bore upon setting of said packer.

4,258,927

SHAFT SEAL WITH RETRACTABLE POLYTETRAFLUOROETHYLENE-LINED SEALING LIP

Douglas A. Cather, Jr., Gastonia, N.C., assignor to Garlock Inc., Longview, Tex.

Filed Dec. 13, 1978, Ser. No. 969,162
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—152 **20 Claims**



1. An apparatus comprising:

(a) a shaft having a first smaller diameter section to be sealed by the below-recited seal and a second larger diameter section over which said seal must pass before contacting said first section; and

(b) an annular shaft seal comprising:

(i) a mounting portion comprising a shell and an elastomeric body bonded thereto;

(ii) a flex portion of elastomeric material integral with said elastomeric body and extending axially therefrom and being of sufficiently narrow cross-section to permit radial movement of the below-recited sealing lip; and

(iii) a sealing lip including an elastomeric backing layer and a polytetrafluoroethylene liner on a radially inner surface of said sealing lip, said elastomeric backing layer being integral with said elastomeric material of said flex portion, said liner being attached to said backing layer, and said seal having the following parameters:

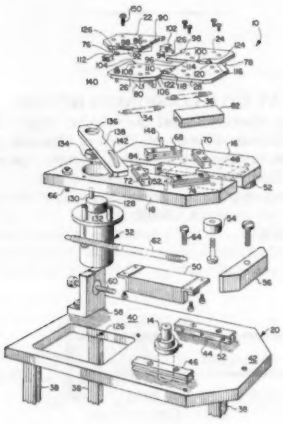
(1) Lip Angle=15°-25°;

(2) Included Angle—divergent axially away from said flex portion;

(3) Clearance Diameter—greater than that of said second shaft section;

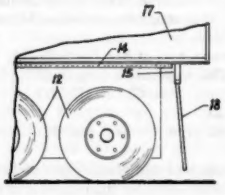
(4) Lip Interference ≧ 100% of X wherein X is the difference between the diameters of said first and second shaft sections; and
(5) Lip Height ≧ 150% of X.

4,258,928
PRECISION POSITIONING DEVICE
Mordechai Wiesler, Woburn, Mass., assignor to Teledyne, Inc., Hawthorne, Calif.
Continuation-in-part of Ser. No. 859,734, Dec. 12, 1977, Pat. No. 4,174,847. This application Apr. 30, 1979, Ser. No. 34,355
Int. Cl.³ B23B *31/16*
U.S. Cl. 279—1 L **17 Claims**



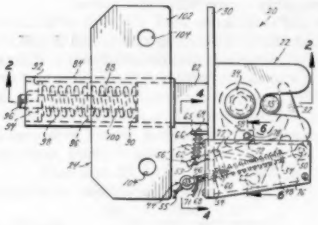
1. A precision positioning device comprising:
(a) a base;
(b) a pair of plates mounted on said base for relative slidable movement along parallel axes;
(c) a plurality of relatively movable guides constrained for mutually coacting movement on said plates, a port of predetermined geometrical configuration formed between said guides, said geometrical configuration governed by the relative positions of said plates; and
(d) driver means operatively connected to at least one of said guides for moving each of said guides, the size of said port determined by the relative positions of said guides.

4,258,929
VEHICLE SPRAY REDUCTION
Ronald E. Brandon, 1734 Lenox Rd., Schenectady, N.Y. 12308, and James W. Winger, 5728 E. Glen Carla Dr., Huntington, W. Va. 25705
Filed Apr. 18, 1979, Ser. No. 31,024
Int. Cl.³ B62D *25/16*
U.S. Cl. 280—154.5 R **2 Claims**



1. In a vehicle spray reduction system for wheeled vehicles operating on wet roadways, comprising a first member to be mounted in a horizontal position above the vehicle tires, said first member having on its undersurface a plurality of spaced, parallel, sharply pointed ridges and a plurality of parallel, vee shaped members which depend from the undersurface by thin, vertical webbs and located between said ridges, said ridges and vee shaped members being aligned with the vehicle whereby water spray from the vehicle tires is deflected by said ridges into troughs formed by said vee shaped members, the water thus captured is protected from dispension by sideways air currents and is drained at the rear end of said trough, and a second member, having a relatively flat configuration, to be mounted in a vertical manner behind said tires to deflect any rearward spray.

4,258,930
HITCHING DEVICE WITH SAFETY LOCK
Donald F. Hess, Rte. 1, Box 25, Evansville, Ill. 62242
Filed Feb. 22, 1979, Ser. No. 13,898
Int. Cl.³ B60D *1/12*
U.S. Cl. 280—508 **9 Claims**



1. In a hitch having two laterally opposed jaw members, a movable hook member disposed between said jaw members, said hook member being pivotable from a normally closed position to an open position, means biasing the hook member into the closed position, and means to retract said hook member into the open position from a location remote to said hitch, the improvement comprising a safety member to selectively prevent the hook member from being retracted into the open position, said safety member having means to be released from a location remote to said hitch and means to coordinate the safety member release means with the hook member retraction means, said coordinating means including a common operator for said hook member and said safety member, said common operator including a common operating cord, a hook member cord extending between said common operating cord and said hook member, and a spring extending between said common operating cord and said safety member so that movement of said common operating cord to open said hitch retracts said safety member before said hook member.

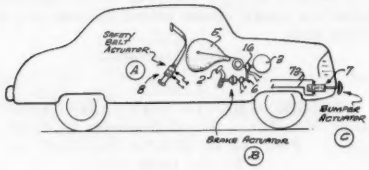
4,258,931
AIR BAG SYSTEM FOR AUTOMOBILES
Joseph K. Lee, 10616 Bramblebush Ave., Whittier, Calif. 90604, and Richard J. Lee, 2205 Calle Taxco, West Covina, Calif. 91791
Filed Aug. 17, 1978, Ser. No. 859,729
Int. Cl.³ B60R *21/08*
U.S. Cl. 280—734 **2 Claims**

1. An air bag system for a vehicle comprising:
an open-front bag container with an air bag therein;
a compressed air tank;
an electrically-actuated control valve with air line connections to said tank and said bag, and
a plurality of switches having connections to actuate said valve to inflate said bag and comprising a switch responsive to over-normal brake pedal pressure, a switch responsive to excessive tension in a passenger-restraint device,

and a switch responsive to impact force against a bumper of said vehicle; and further comprising

an air deflation pump with air connections to said valve disposed to deflate said air bag upon operation of said pump;

an electric motor with a shaft drivably connected to said pump;



a manual switch in the passenger compartment of said vehicle energizably connected to said motor;

drums on said shaft, and

cords connected to said air bag and to said drums;

said motor winding said cords on said drums to draw said air bag back into said container while driving said deflation pump.

4,258,932

Patent Not Issued For This Number

4,258,933

MOVABLE INBOARD BELT GUIDE FOR USE IN PASSIVE VEHICLE OCCUPANT RESTRAINT SYSTEMS

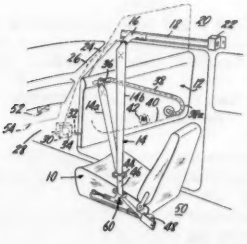
Juichiro Takada, 3-12-1, Shinmachi, Setagayaku, Tokyo, Japan

Filed Jun. 11, 1979, Ser. No. 47,380

Claims priority, application Japan, Dec. 25, 1978, 53-175998[U]; Dec. 25, 1978, 53-175999[U]

Int. Cl.³ B60R *21/08*

U.S. Cl. 280—804 **7 Claims**



1. In a passive vehicle occupant restraint system for a vehicle seat having a foldable back, the system including a belt leading from an inboard location adjacent the lower rear portion of the seat, the improvement of an inboard movable belt guide comprising a belt guide member having a ring portion through which the belt is freely movable, means mounting the belt guide member on the inboard side of the seat for generally forward and backward movement of the ring portion, and drive means coupled between the belt guide member and an element associated with the back of the seat for moving the belt guide ring portion forwardly in response to forward folding of the seat back and for moving the ring portion rearwardly in response to restoration of the seat back to the normal upright position.

4,258,934

SEAT BELT TENSIONING DEVICE

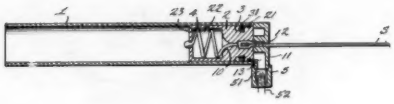
Noboru Tsuge, Kariya; Satosi Kuwakado, Aichi; Toshihiro Takei, and Toshiaki Shimokawa, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed May 8, 1979, Ser. No. 37,215

Claims priority, application Japan, May 23, 1978, 53/61282

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—806 **15 Claims**



11. A seat belt tensioning device comprising:

a cylinder having a piston movable in only one direction for tightening a seat belt in an emergency,

means for forcibly moving said piston in said one direction to cause said emergency tightening, and

deformable means connectable to said seat belt and having a predetermined deforming stress value and movable as a unit in said one direction with said piston,

said deformable means being extendable in an opposite direction a substantial distance upon deformation by a force exceeding said deforming stress value.

4,258,935

BELL END OF A BELL AND SPIGOT JOINT

Peter Rodrigo; Kemener J. Whalen, and David W. French, all of Littleton, Colo., assignors to Johns-Manville Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 825,496, Aug. 17, 1977, abandoned. This application Aug. 7, 1978, Ser. No. 931,342

Int. Cl.³ F16L *13/10*

U.S. Cl. 285—21 **9 Claims**

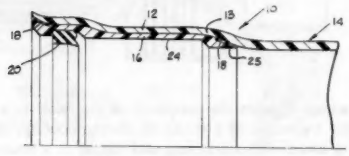
1. In a plastic pipe, the bell end of a bell and spigot joint comprising:

(a) an end section of said plastic pipe, said end section having a greater inner diameter than the rest of said pipe, said end section having a conical surface at the end thereof and at its junction with the rest of the pipe;

(b) an axially extending circumferential insert positioned concentrically within said end section and against the

inner surface thereof extending substantially the length of said end section, said insert having an inner diameter greater than said spigot, axially spaced ends, and including a concentric, circumferential groove for receiving a sealing gasket located in its inner surface and spaced from said axially spaced ends; and

(c) means for bonding said insert to said inner surface of said end section within said end end section at said conical surfaces such that said insert adds thickness to the wall of



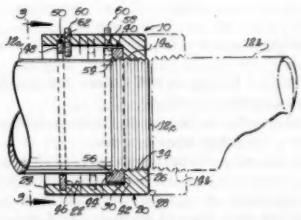
said end section, said means for bonding including a first circumferential strip of bonding material circumscribing the outer surface of said insert at one end thereof to form a generally conical surface adjacent said end, and a second circumferential strip of said bonding material circumscribing the outer surface of said insert at the opposite end thereof forming a second conical surface adjacent said opposite end of said insert, said conical surfaces formed by said bonding material facing towards the rest of said pipe.

4,258,936

COUPLING

Harold D. Goldberg, Hazelcrest, Ill., assignor to Allied Tube & Conduit Corporation, Harvey, Ill.

Filed Jan. 7, 1980, Ser. No. 110,221
Int. Cl.³ F16L *19/00*
U.S. Cl. 285—31 **10 Claims**



1. A coupling for connecting two conduit sections or the like in axially aligned end-to-end relation, said conduit sections having identical external threads formed on at least one end of each of said conduit sections, said coupling comprising:

a first coupling element having an internal chamber opening outwardly of one end and being of sufficient size to receive the threaded end of either of said conduit sections therein, said first coupling element having an internal thread adapted for threaded engagement with the threaded end of either of said conduit sections when inserted within said chamber,

a second coupling element disposed within said chamber and axially movable therein, said second coupling element having an opening therethrough the circumference of which is defined by means adapted for releasable connection to the threaded end of either of said conduit sections when received within said chamber,

means supported by said first coupling element within said chamber and cooperative with said first coupling element to limit axial movement of said second coupling element within said chamber,

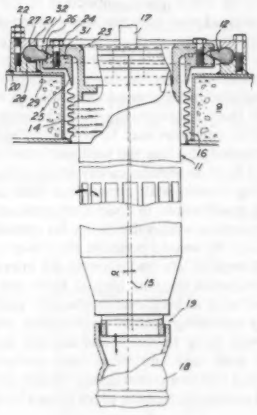
and stop means cooperable with said first and second coupling elements to enable selective interconnection thereof, said first and second coupling elements and said threaded ends of said conduit sections being adapted for interconnection of said second coupling element with the threaded end of a selected one of either of said conduit sections when said coupling is disposed in adjacent substantially axial alignment with said selected conduit section followed by threaded engagement of said first coupling element with said threaded end to effect a substantially flush relation of said coupling with the end of said selected conduit section so as to enable relative lateral movement between said two conduit sections to establish close axial alignment of said conduit sections, said first coupling element being releasable from said selected conduit section and adapted for threaded engagement with the other conduit section in a manner to maintain said conduit sections in substantially fixed coupled relation.

4,258,937

CONNECTING DEVICE FOR AN EQUIPMENT UNIT SUSPENDED FROM A SYSTEM WHICH SUBJECTS SAID UNIT TO DIFFERENTIAL MOVEMENTS OF DISPLACEMENT

Edouard R. Barneoud, Marnes-la-Coquette; Michel Guer, Echirolles; Paul Lecouvreur, Fresnes, and Jean Roumailhac, Versailles, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 29, 1976, Ser. No. 653,580
Claims priority, application France, Feb. 6, 1975, 75 03748
Int. Cl.² F16L *3/16*
U.S. Cl. 285—61 **6 Claims**



1. In a connecting device of the type in which the upper end of an equipment unit is resiliently suspended from a first structure by resilient suspension means while the lower end thereof is connected by means of a swivel joint to a second structure which is subjected to differential movements of displacement with respect to said first structure, said resilient suspension means comprising first and second opposed annular bearing surfaces on the upper end of said equipment unit and said first structure, a torus shape resilient metal ring having first and second annular bearing portions disposed in engagement with said first and second bearing surfaces, respectively, said first bearing surface and said first bearing portion having complimentary partial circular cross-sections whereby said first bearing portion is rotatable relative to said first bearing surface about a circular axis.

4,258,938

PIPE COUPLINGS

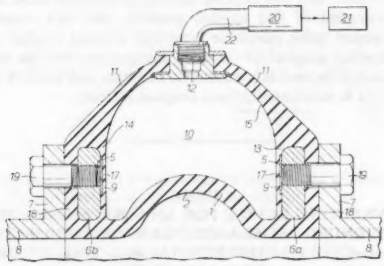
Patrick F. Davy, Horsham, England, assignor to Andre Rubber Company Limited, Surbiton, England

Continuation of Ser. No. 866,869, Jan. 4, 1978, abandoned. This application Mar. 8, 1979, Ser. No. 18,517

Claims priority, application United Kingdom, Jan. 5, 1977, 178/77

Int. Cl.³ F16L *27/10*

U.S. Cl. 285—93 **5 Claims**



1. A pipe coupling comprising an elastomeric bellows having annular end faces adapted to abut corresponding annular flanges of pipes being coupled, said bellows comprising an integral moulded one-piece elastomeric unit having a thick fabric-reinforced internal wall defining a passageway for fluid flowing through the coupling and a thick fabric-reinforced external wall, the external wall being of generally uniform thickness but being thickened in regions adjacent to the end faces; and annular metal plate embedded in the thickend regions of the external wall adjacent the respective end faces at each end of the bellows, each plate lying in a plane substantially parallel to said end faces and being surrounded by fabric-reinforced elastomeric material, each plate further including a plurality of threaded holes aligned with corresponding holes in respective end faces for receiving threaded ends of a bolt or stud such that the end faces may be bolted to the flanges of the pipes being coupled; the internal wall and external wall being spaced apart to form an annular cavity around the passageway, the cavity being fillable with pressurized fluid and a sensing element being positionable in fluid communication with and responsive to pressure within the cavity for providing an alarm output whenever the sensed pressure rises over or falls below predetermined limit values; and wherein the internal and external walls interconnect the annular end faces and each have a portion formed with at least one permanent, preformed, radially outwardly extending arch or corrugation, said portion of said internal wall lying between said annular end faces such that, together with said end faces, said portion provides a zig-zag or folded bellows construction which allows for axial expansion and contraction of the pipes joined by the coupling.

4,258,939

END CONNECTION STRUCTURE FOR A HOLLOW CONDUCTOR ASSEMBLY

Urs Karlen, Lupsingen, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

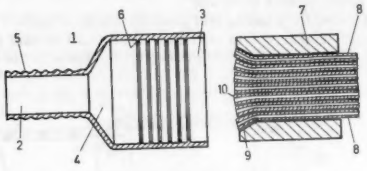
Filed May 10, 1977, Ser. No. 795,431

Claims priority, application Switzerland, Jun. 21, 1976, 7868/76

Int. Cl.³ F16L *13/08*

U.S. Cl. 285—137 R **6 Claims**

1. An electrically conductive coupling structure for an assembly of a plurality of hollow conductors in which the hollow conductors form at least part of a winding for an electrical machine to be cooled by passing a fluid coolant through the conductors, comprising: a cylindrical sleeve, said assembly being received by the cylindrical sleeve with each of the plurality of hollow conductors being soldered to one another and the assembly of the plurality of the hollow conductors being soldered to the cylindrical sleeve to form a gas-tight seal, and a nipple including a cylindrical section receiving said sleeve



and which engages the periphery of the latter in a gas-tight manner by means of a shrink fit during cooling, said nipple having means for connecting said nipple to a source of said fluid coolant.

4,258,940

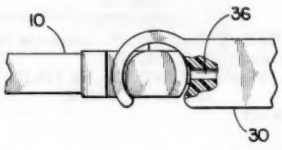
SEALING CONNECTOR FOR LIQUID AND GAS SYSTEMS

David C. Fudge, Irvine, Calif., assignor to Bio-Dynamics, Inc., Indianapolis, Ind.

Filed Mar. 1, 1979, Ser. No. 16,429

Int. Cl.³ F16L *39/00*

U.S. Cl. 285—137 R **6 Claims**



1. A sealing connector for liquid and gas systems comprising:

a first member having an end surface defining first and second passageway openings;

a second member having an end surface defining third and fourth passageway openings; and

first and second resilient o-rings secured to one of said first and second members and surrounding each of the passageway openings of said member, said o-rings projecting outwardly from the end surface of said member;

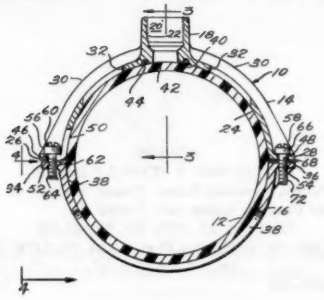
said first member having a shoulder facing away from the end surface, the shoulder having a first portion which is generally semi-cylindrical with a central axis parallel to a line between the first and second openings, the shoulder having a second portion extending further from the central axis than the semi-cylindrical first portion;

said second member including a C-shaped arm extending beyond the end surface and defining a cam surface terminating at a point spaced apart from the end surface, the first and second portions of the shoulder of said first member and the cam surface of the arm of said second member being shaped and oriented to provide for connection of said first and second members by placement of the cam surface of the arm of said second member adjacent the first portion of the shoulder of said first member and rotation of said first member relative said second member about an axis parallel to the central axis, the cooperation of the cam surface of the C-shaped arm with the second portion of the shoulder upon rotation resulting in the end surface of said first member being forced against the end surface of said second member with said o-rings being resiliently deformed therebetween to provide a sealing relationship.

4,258,941
SERVICE CLAMP FOR PLASTIC PIPE OR THE LIKE

Robert E. Sands, Shelbyville, Ill., assignor to Mueller Co., Decatur, Ill.

Filed Jul. 19, 1979, Ser. No. 58,801
Int. Cl.³ F16L 41/04
U.S. Cl. 285—197 8 Claims



1. A service clamp for tapping a hole in a main pipe and/or supporting a branch pipe, said service clamp comprising:

a first saddle part having a curved surface substantially complementary to a portion of the surface of the main pipe and having a flange extending outwardly from each end thereof, each flange having an unthreaded aperture therethrough, and said first saddle part having a slot therethrough opening to said curved surface and communicating with one of said unthreaded apertures, said slot being wider than said one aperture;

a second saddle part having a curved surface substantially complementary with a portion of the surface of the main pipe and having a flange extending outwardly from each end thereof, each of said flanges having a threaded aperture therethrough, said first saddle part cooperating with said second saddle part to embrace the main pipe therebetween with their respective flanges opposing one another and apertures in the opposing flanges being aligned with each other;

a radially extending branch pipe extension on one of said first and second saddle parts and defining a through-bore opening to the curved surface of the same;

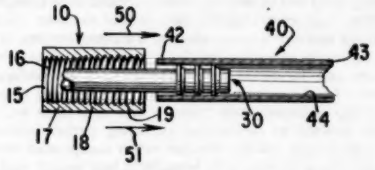
sealing means carried by the one of said first and second saddle parts having said branch pipe extension and arranged to seal around a hole tapped in the main pipe; and

clamping means for clamping said first saddle part to said second saddle part on the main pipe, said clamping means including a first screw having a head, said first screw being partially threaded into the threaded aperture in one flange of said second saddle part which is to be aligned with the unthreaded aperture of the opposed flange of said first saddle part which is in communication with the slot therein, means for staking said first screw to prevent the same from being unthreaded from the threaded aperture, and a second screw having a head and extending through the unthreaded aperture of the other flange of said first saddle part, means for retaining said second screw in said unthreaded aperture of the other flange of said first saddle part prior to assembly of said first saddle part and said second saddle part about the main pipe, said first screw having its head arranged to slip through said slot and bear against said one flange to provide a hinge between said first saddle part and said second saddle part when said saddle parts are being assembled about said main pipe, both of said screws then being capable of being tightened so that their heads bear on the respective flanges of said first saddle part to apply a uniform load on said sealing means.

4,258,942
THREADED FERRULE HOSE COUPLING

Frank J. Viola, Uniondale, N.Y., assignor to Ideal Corporation, Brooklyn, N.Y.

Filed May 25, 1979, Ser. No. 42,573
Int. Cl.³ F16L 33/22
U.S. Cl. 285—245 8 Claims

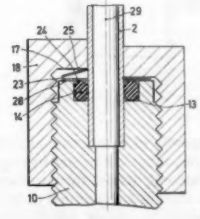


1. A coupling device for joining an end portion of a hose to a nipple that is inserted into said hose, said nipple having on its outer side a set of axially spaced projections for engaging the inner wall of said hose, said device comprising a rigid ferrule providing along its inner side two cylindrical portions of different diameters joined together by a frusto-conical portion and having a spiral thread of constant pitch formed on and along the inner side of all said portions, whereby upon turning said ferrule onto a hose fitted with a nipple, the thread in the larger of said cylindrical portions presses a mating thread into the hose and axially advances said ferrule along the hose, after which the thread in said frusto-conical portion deepens said mating thread and radially contracts the hose into the space between projections of the nipple, and the thread in the smaller of said cylindrical portions holds the hose contracted into said space.

4,258,943
FLUID LINE CONNECTION DEVICE

Peter Vogt, and Rainer Hoh, both of Schweinfurt, Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Nov. 7, 1978, Ser. No. 958,413
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1977, 2751208.
Int. Cl.³ F16L 19/00
U.S. Cl. 285—340 8 Claims



1. A device for connecting two fluid flow lines, particularly suited for joining a shock absorber with a supply line of a compressed air source, comprising: a first connection member and a second connection member forming therebetween a fluid flow passage between said two fluid flow lines; means for releasably interconnecting said first and second connection members; means defining in at least one of said first and second connection members a recess for receiving therein a tubular member constituting a terminal end of at least one of said two fluid flow lines; a sealing element arranged to extend about said tubular member; means defining a pair of opposed stop faces which are moved toward each other upon interconnection of said connection members; and a clamping member arranged between said opposed stop faces adapted to be brought into

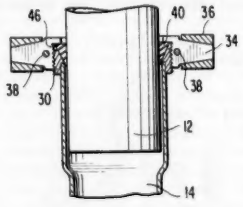
clamping engagement with the said tubular member by compression thereof between said stop faces; said clamping member being formed with a clip-like configuration including a bottom portion and lug means integrally formed with said bottom portion and extending obliquely therefrom, said bottom portion being provided with a bore therethrough to enable said tubular member to be passed through said bore with said lug means extending from said bottom portion with at least one radially inner end of said lug means adapted to be brought into abutting engagement against said tubular member when said clamping member is compressed in a manner tending to bring said lug means toward a parallel orientation with said bottom portion; said lug means being arranged to extend obliquely to the axis of said tubular member when said clamping member is in an uncompressed state between said stop faces and to be moved toward an orientation extending perpendicularly to said axis of said tubular member when compressed between said stop faces thereby to be brought to bear against said tubular member in clamping engagement therewith; a generally annular recess extending around said tubular member and having said sealing element contained therein, said bottom portion of said clamping member being arranged to overlie said annular recess and to apply a compressive force against said sealing element when said clamping member is compressed between said stop faces; said lug means comprising two oppositely located tongues formed of planar strips, each of said tongues having an inner clamping surface at its end located for engagement against said tubular member, said clamping surfaces of each of said tongues being formed with a substantially v-shaped configuration thereby to define therebetween a substantially quadrilateral recess within which said tubular member may extend for clamping engagement therein.

4,258,944

SPLIT SLIP NUT AND SEAL ASSEMBLY FOR PLUMBING TRAP

Ion L. Wendel, 6585 Haines Rd. North, St. Petersburg, Fla. 33702

Filed Nov. 9, 1978, Ser. No. 959,342
Int. Cl.³ F16L *17/06*
U.S. Cl. 285—342 **4 Claims**



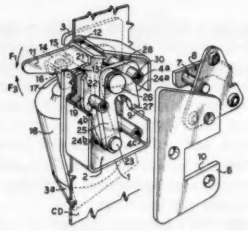
1. A plumbing assembly such as a trap or similar installation including a first, outer, tubular member having a longitudinal passage therein, a second, inner, tubular member having a longitudinal passage therein and adapted to be received in the longitudinal passage of the outer tubular member, a male sleeve having external threads and being engaged on an end portion of the other tubular member, an annular seal made from flexible and deformable material received between an outer surface portion of the inner tubular member and an inner surface portion of the male sleeve, a split nut including two separable split sections each having projecting from opposite portions thereof lugs with the lugs of one section registering with the lugs of another section, fastener means securing the lugs of the split sections together as a unit, said split nut sections having matching internal threads engaged on the threads of the male sleeve, said split nut sections having internal surface portions pressing said seal into engagement between the male sleeve and the inner tubular member to secure the inner and outer tubular members together and to establish a seal therebetween, said fastener means being removable from said lugs to disassemble said split nut sections laterally of the tubular members, and said seal being split to enable removal from around the inner tubular member laterally thereof, and wherein said lugs of the split nut sections define a tapered surface on the exterior thereof and wherein said fastener means includes a sleeve having a tapered internal surface corresponding to and engaging the tapered surface of the lugs.

4,258,945

LATCH FOR A VEHICLE DOOR

René J. Pouget, Levallois-Perret, France, assignor to Aciers et Outillage Peugeot, Audincourt, France

Filed Oct. 12, 1979, Ser. No. 84,341
Claims priority, application France, Oct. 18, 1978, 78 29650
Int. Cl.³ E05C *5/02*
U.S. Cl. 292—68 **12 Claims**



1. A latch for a vehicle door comprising a case, a latch mechanism in the case, a keeper movable relative to the mechanism, an actuating element for releasing the latch mechanism and the keeper for opening the door, and means for reducing the force exerted on the actuating element by the keeper when opening the latch, said force reducing means comprising a lever which is pivotally mounted in said case and comprises at least one stop recess cooperating with said actuating element, a first link forming a claw for engaging and retaining the keeper in a latching position of the latch, and a second link which is pivotally mounted in said case and on which second link the first link is pivotally mounted, the lever being pivotally mounted on the first link.

4,258,946

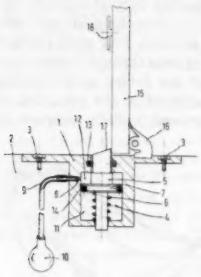
LOCK FOR WINDOW SASHES AND THE LIKE

Attilio Angioletti, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Oct. 27, 1978, Ser. No. 955,308
Claims priority, application Italy, Dec. 1, 1977, 30224 A/77
Int. Cl.³ E05C *17/56*
U.S. Cl. 292—144 **10 Claims**

1. A device for locking a hinged closure member in a first opening characterized in that said device comprises a casing provided with a second opening, a slidable base member having a pin fixed thereto and disposed through the opening, resilient biasing means urging said slidable base memeber and pin to a postion where the pin protrudes through the second

opening and locks the closure member in a closed position, and means for moving said slidable base member and pin in opposition to said resilient biasing means comprising a flexible bulb adapted to be squeezed to force air into the cavity.



4,258,947

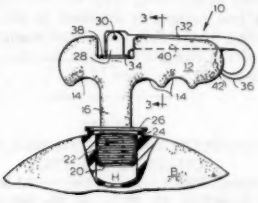
HANDLE ATTACHMENT FOR BOWLING BALL

Donald C. Thompson, 2720 Buttonwillow, Stockton, Calif. 95207; Richard L. Cross, 1027 Aldwina, and Jimmie Rose, El Rancho Mobile Home Park, both of Manteca, Calif. 95336

Filed Jul. 5, 1979, Ser. No. 54,977

Int. Cl.[3] **A65G** *7/00;* **A63B** *43/02*

U.S. Cl. 294—15 **5 Claims**



1. A handle attachment for transporting a bowling ball provided with and defining a thumb or finger hole, said attachment comprising:

a hand grip;

a shank extending from the grip;

a radially expansible, generally cylindrical plug at the end of the shank opposite the grip, said plug being the only point of support between the handle and the bowling ball;

plug expansion and contraction control means extending through the plug, shank and grip for changing the length and therefore the radius of the plug between a self-locking position and a release position,

whereby the plug may be freely inserted into and withdrawn from the thumb hole of the bowling ball in the release position and will securely engage the sidewall defining the thumb hole in the locking position so as to provide a secure yet releasable engagement between the handle attachment and the bowling ball.

4,258,948

ROOFER'S BUNDLE TOOL

Thomas M. Hoffmann, 665 Stagg La., Santa Cruz, Calif. 95062

Filed Aug. 20, 1979, Ser. No. 68,169

Int. Cl.[3] **B65G** *7/12*

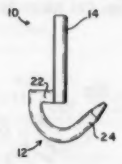
U.S. Cl. 294—26 **8 Claims**

1. A ROOFER'S BUNDLE TOOL comprising: elongated handle means including

a grip portion, and

a hook support portion coupled to said grip portion and spaced therefrom sufficiently to permit a roofer's fingers and knuckles to fit between said grip portion and said hook support portion, said grip portion and said hook support portion lying within a common plane; and

hook means including at least two spaced apart hooks, each hook having



an offset portion extending angularly from said plane and having a first end attached to said hook support portion, and

an elongated arcuate portion having a first end coupled to a second end of said offset portion, said arcuate portion extending through said plane and terminating at a second end in a bluntly conical tip, a section of the arcuate portion being bent away from said plane to form a gaff.

4,258,949

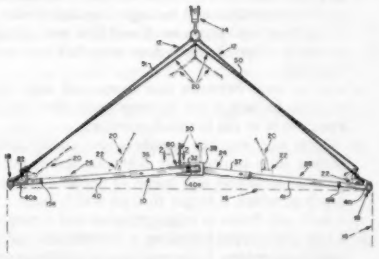
EXTENSIBLE SPREADER FRAME FOR CARGO CONTAINERS

Francis R. Keagbine, Portland, Oreg., assignor to Allied Systems Company, Tigard, Oreg.

Filed Jul. 9, 1979, Ser. No. 55,708

Int. Cl.[3] **B66C** *1/66*

U.S. Cl. 294—81 SF **6 Claims**



2. An extensible lifting spreader frame for handling cargo containers, comprising:

a central pair of sleeve beams rigidly joined together side-by-side, each being open at both ends,

a pair of beam arms, one slidably mounted through each sleeve beam for extension and retraction, each said beam arm being extensible in an opposite direction from the other,

and container engagement means at the outer end of each beam arm for engaging said spreader frame with a cargo container to enable lifting said container by lifting said frame,

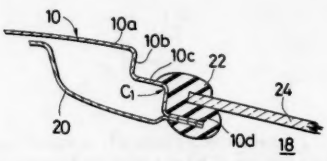
said pair of sleeve beams being angled downwardly in opposite directions from their intersection with one another so as to define a spreader frame with a center elevation above its opposite end elevations.

4,258,950

VEHICLE BODY CONSTRUCTION AND METHOD OF OBTAINING SAME

Hiroshi Itoh, Tokyo; Yoshimasa Tuchiya, Sayama, and Yoshinori Katayama, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Aug. 3, 1979, Ser. No. 63,367
Claims priority, application Japan, Aug. 7, 1978, 53-95449
Int. Cl.³ B62D *25/00*
U.S. Cl. 296—56 **12 Claims**



1. A vehicle body construction having a back door receiving opening, comprising:

a roof panel having an outer exterior portion defining the body of the vehicle and a flange portion projecting inwardly therefrom;

a rear fender outer panel extending consecutively from said outer roof panel and having an outer exterior portion defining the outer body of the vehicle and a flange portion projecting inwardly therefrom;

said flange portions of the outer roof panel and the rear fender outer panel defining sides of said receiving opening;

a first support member having a side wall portion inward from the flange portion of said roof panel and a bottom wall portion extending substantially perpendicularly from said side wall portion into said receiving opening;

a second support member having a side wall portion extending inwardly from the flange portion of said rear fender outer panel and a bottom wall portion extending substantially perpendicularly from said side wall portion into said receiving opening;

a back door assembly movable between a raised position and a lowered position and having a frame positioned adjacent the bottom wall portions of said first and second support members when the back door assembly is in the lowered position;

a weather strip between said frame and said bottom wall portions to form a seal therebetween when the back door assembly is in the lowered position;

in which said support members are constructed and arranged so as to cooperate with said flange portions, said weather strip and said frame to define a drip trough the depth of which is larger than its width; and

in which said frame is so constructed and arranged to have a box-like section including a bottom side and to engage said weather strip at the wall portion defining said bottom side.

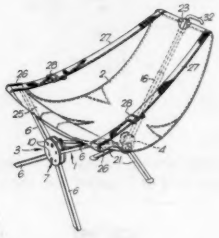
4,258,951

COLLAPSIBLE CHAIRS AND WHEELCHAIRS

Simeon H. Groom, London, England, assignor to Lock Industrial Developments, Luxembourg, Luxembourg

Filed Mar. 7, 1978, Ser. No. 884,246
Claims priority, application United Kingdom, Mar. 9, 1977, 9997/77; Jun. 17, 1977, 25498/77
Int. Cl.³ A47C *4/00*
U.S. Cl. 297—16 **18 Claims**

1. A portable collapsible chair comprising a bracing frame and a separate flexible seat removably attached to the bracing frame in which the frame is readily pivotable from a folded position to an erected position for attachment of the flexible seat to support and brace the flexible seat clear of the ground surface on which the chair is supported, wherein the bracing frame comprises two articulated assemblies connected by an elongated tubular support, a first articulated assembly, forming the front of the chair, comprising a center bracket interconnected to said elongated tubular support for movement between a first folded position alongside said tubular support and a second extended position, four arms pivotally connected to said bracket for movement through a common plane when said bracket moves from the folded position lying alongside the elongated tubular support to the extended position wherein two of the arms extend radially upward from the center



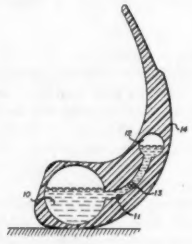
bracket to form seat supports and the other two arms extend radially downward to form legs and a second articulated assembly, forming the back of the chair, comprising an elongated tubular member and at least two support legs at the lower end thereof, which legs are pivotable from a folded position, lying alongside the elongated tubular support, to an extended position projecting downwardly from the two tubular members, said flexible seat removably attached to the two upwardly extending arms of the first articulated assembly and to the upper end of the elongated tubular member of the second articulated assembly.

4,258,952

ROCKING COUCH, CHAISE, LOUNGE, RECLINER, CHAIR OR RELAXER

Antonio S. Dutra, 2949 Driftwood Dr., San Jose, Calif. 95128

Filed Dec. 15, 1978, Ser. No. 969,929
Int. Cl.³ A47C *3/029, 1/02*
U.S. Cl. 297—258 **6 Claims**



1. A reclining, rocking article of furniture comprising:

a frame member including a back rest portion and a seat rest portion, said portions being integrally jointed to form a continuous curved back and bottom surface upon which the article may rock and recline and further forming a top and front surface adapted to support a human body in a sitting position, either upright or reclined;

a first enclosed cavity situated within the interior of said seat rest portion of the frame member;

a second enclosed cavity situated within the interior of said back rest portion of the frame member;

a tube means situated within the interior of the frame interconnecting the first and second enclosed cavities;

a flowable ballast of relatively high density filling some but significantly less than all of the combined volumes of the first enclosed cavity, the ballast flowing through the tube means between the cavities under the force of gravity; and

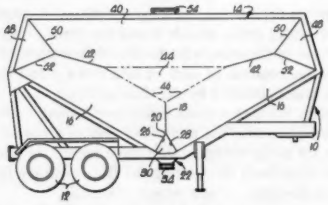
valve means situated within the tube means so as to fill a segment of the tube means for controlling the relative distribution of the ballast between the first enclosed cavity and the second enclosed cavity, the valve means including an open condition under which the ballast freely flows through the tube means and under which the distribution of ballast may be adjusted by altering the relative heights of the first and second enclosed cavities and a closed condition under which no ballast may flow in either direction through the valve means or the tube means, and valve control means for selecting said open condition or said closed condition, said valve control means being accessible from the exterior of the frame.

4,258,953

DRY BULK HOPPER HAVING AN IMPROVED SLOPE SHEET

Ronald D. Johnson, 3516 W. 97th Pl., Leawood, Kans. 66208

Filed Nov. 29, 1978, Ser. No. 964,585
Int. Cl.³ B60P *1/56*
U.S. Cl. 298—27 **5 Claims**



1. An elongated hopper body for dry bulk products, said body including:

means defining a normally lowermost outlet located on the longitudinal axis of the body as viewed from the top thereof;

a product slide surface formed by the interior of said body and directed toward said outlet for gravitation of product along said surface during discharge from the body,

said surface being transversely outwardly arcuate throughout at least a major part of its expanse and including a pair of opposite, transversely outwardly arcuate end strips mutually converging toward said outlet along said longitudinal axis of the body as viewed from the top of the latter,

said strips each having a resultant product fall line of less than 45° but greater than 25°, and the remaining portions of said surface having resultant product fall lines equal to or exceeding 45°,

the intersections of said strips with said remaining portions of the surface along the longitudinal extremities of the strips being arcuate continuations of said strips and having resultant product fall lines not less than the resultant product fall line of said strips.

4,258,954

PROCESS FOR THE SOLUTION MINING OF A MINERAL

Dennis E. Stover, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 734,314, Oct. 20, 1976. This application Jul. 20, 1978, Ser. No. 926,597
Int. Cl.³ E21B *43/28;* E21C *41/14*
U.S. Cl. 299—4 **7 Claims**

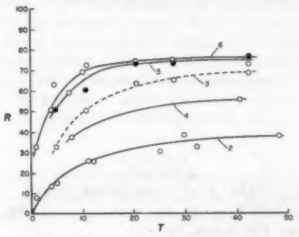
1. An improved method for the solution mining of a mineral from a subterranean formation containing same in which an injection and production well are drilled and completed within said formation, leach solution and an oxidant are injected through said injection well into said formation to dissolve said mineral into said solution, and said solution containing said dissolved mineral is recovered via said production well, wherein the improvement comprises increasing the flow rate of said oxidant and leach solution by at least a factor of two when the concentration of said dissolved mineral in said recovered solution begins to decline.

4,258,955

PROCESS FOR IN-SITU LEACHING OF URANIUM

Edward T. Habib, Jr., Richardson, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,327
Int. Cl.³ E21B *43/28*
U.S. Cl. 299—5 **5 Claims**



1. In the recovery of uranium from a subterranean uranium-containing deposit penetrated by injection and production systems, the method comprising:

(a) introducing an aqueous lixiviant containing a carbonate leaching agent and an oxidizing agent into said deposit via said injection system at a relatively low temperature and displacing said lixiviant through said subterranean deposit to solubilize uranium therein,

(b) thereafter heating an aqueous lixiviant containing a carbonate leaching agent and an oxidizing agent to an elevated temperature greater than the temperature of step (a) and introducing said heated lixiviant into said deposit via said injection system,

(c) producing pregnant lixiviant containing uranium from said production system, and

(d) treating said pregnant lixiviant to recover uranium therefrom.

4,258,956

METHOD AND APPARATUS FOR DRIVING A SINGLE TRANSVERSELY ELONGATED TOOL WITH A PLURALITY OF FORCE TRANSMITTING BEAMS

Raymond A. Gurries, Reno, Nev., assignor to The Gurries Company, Sparks, Nev.

Continuation-in-part of Ser. No. 916,112, Jun. 15, 1978, abandoned, and a continuation-in-part of Ser. No. 973,163, Dec. 26, 1978, which is a continuation-in-part of Ser. No. 873,249, Jan. 30, 1978, abandoned. This application Mar. 30, 1979, Ser. No. 25,484
Int. Cl.³ A01B *35/00*
U.S. Cl. 299—14 **9 Claims**

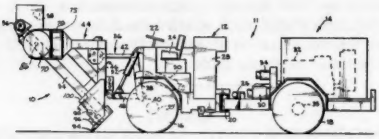
9. A method for driving an elongated tool comprising the steps of:

mounting the tool for reciprocal motion transverse to its length;

pivotably mounting a plurality of force transmitting beams each having an input, a resonant node and an output at the anti-nodes so the outputs of the beams are spaced apart

adjacent to the length of the tool without attachment to the tool;

coupling sonic vibrations in synchronism to the inputs of the force transmitting beams so their outputs vibrate in synchronism about a neutral position; and



coupling the outputs of the force transmitting beams to the tool in synchronism by rigidly limiting rotation of each beam about its one node; and

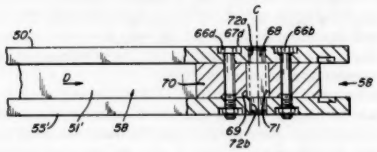
independently adjusting the spacing between the neutral position of the output of each force transmitting beam and the tool so that the spacings are the same.

4,258,957

CUTTING MACHINE NOSE SHOE

Ralph W. Mitchell, Franklin, Pa., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Dec. 18, 1978, Ser. No. 970,604
Int. Cl.³ E21C *25/30*
U.S. Cl. 299—82 **4 Claims**



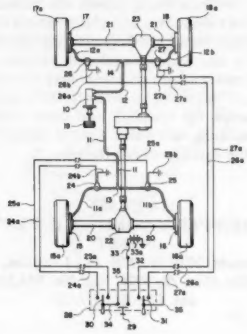
1. A nose shoe apparatus in a cutter bar having upper and lower plate members with spaced parallel adjacent inner surfaces and a cutter chain operably connected to be driven in a closed path between said plates comprising: a cylindrical nose shoe member having a plurality of arcuate load bearing surfaces on the outer cylindrical surface; a first central bore about the axis of said cylindrical shoe member; said plurality of arcuate surfaces lying at an equal radial distance from said axis; said first central bore having an inner load bearing surface permitting concentric rotation of said shoe member about the axis of said bore; said nose shoe member being composed of a solid rigid material capable of supporting radially inward forces exerted by said chain and transmitting such forces through said inner load bearing surface to such plate members said shoe member having at least one second through bore with an axis generally parallel to the axis of said cylindrical shoe member; the diameter of said first central bore being substantially less than the outer diameter of said cylindrical shoe member; said second through bore being spaced radially outward from said inner load bearing surface; the axis of said second through bore being spaced radially inward of said arcuate load bearing surfaces; and at least one of said arcuate load bearing surfaces extending through at least 90 degrees of the outer cylindrical surface of said shoe member.

4,258,958

SELECTIVE CONTROL OF FLUID TO BRAKES

Wayne N. Bloxham, Lincoln, Calif., assignor to Selectra-Trac, Inc., Auburn, Calif.

Filed May 14, 1979, Ser. No. 38,442
Int. Cl.³ B60T *13/00*
U.S. Cl. 303—6 A **7 Claims**



1. In a motor-driven vehicle having two axles, each axle containing a pair of drive wheels which are driven by a drive shaft connected to the drive wheels on each axle by a differential, wherein the rotation of each of said drive wheels is controlled by a brake actuated by the flow of brake fluid from a master cylinder through a trunk brake line leading to each of said axles, which trunk line is divided into two branch lines leading directly to the brakes of said drive wheels on said axle; a system for selectively controlling the flow of brake fluid to the brakes of the drive wheels which comprises

(a) valve means located on each branch brake line leading directly to the brake of each drive wheel,

(b) valve operating means comprising

(1) a spring loaded depressible primary electrical switching means interconnecting the electrical system of said vehicle with a pair of secondary electrical switching means, said primary switching means being actuated only when manually being depressed and held in a depressed position,

(2) a pair of manually operated secondary electrical switching means, each interconnecting said primary electrical switching means with the valves on the branch brake lines of a separate axle, said secondary switching means being operable only when the primary switching means is activated, each of said secondary switching means comprising a three-way switch having an off position and a first and second activated position,

(3) said valves and primary and secondary switching means being interconnected such that when the primary switching means is activated, each secondary switching means become separately operable and functions such that in the off position, the valves on the branch lines interconnected with such secondary switch remain open; and when either secondary switch is manually moved to a first activated position, one valve on the branch line connected with said secondary switch closes and the other valve on the same axle remains open preventing the flow of brake fluid to the brake of one wheel on said axle and when in a second activated position, the opposite valve on said branch line closes and the valve which was closed when the secondary switch was in the first activated position remains open preventing the flow of brake fluid to the brake of the opposite wheel on said axle.

4,258,959

FLUID PRESSURE OPERABLE TRACTOR AND TRAILER VEHICLE BRAKING SYSTEMS

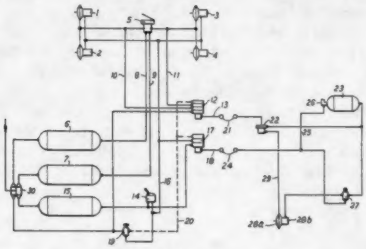
David J. Knight, and Sidney A. Lippiatt, both of Bath, England, assignors to Bendix Westinghouse Limited, Bristol, England

Filed Jul. 21, 1978, Ser. No. 927,264

Claims priority, application United Kingdom, Jun. 25, 1977, 26706/77

Int. Cl.[3] B60T *13/00*

U.S. Cl. 303—7 9 Claims



1. A tractor trailer fluid pressure brake control circuit comprising:

tractor service and spring brakes;

trailer service and spring brakes;

a fluid pressure reservoir;

a trailer service line for communicating fluid pressure to the trailer service brakes;

a service brake control valve for generating a primary fluid pressure signal communicated to the tractor service brakes and to the trailer service line to control the application of the tractor and trailer service brakes;

a trailer supply line for communicating fluid pressure to the trailer spring brakes;

a manually operable auxiliary control valve for generating an inverted graduable auxiliary fluid pressure signal variable between minmum and maximum levels for communication to the tractor spring brakes and to the trailer supply line to control the application of the tractor and trailer spring brakes; and

a manually operable pressure control valve for generating a maximum pressure signal communicated to the trailer service brakes to effect an application thereof and communicated to the trailer spring brakes to effect a release thereof and to effect a repressurization of the trailer supply line in response to an operator parking release input signal applied during a period when the tractor and trailer spring brakes are applied and when the tractor and trailer service brakes are released, the pressure control valve further comprising means responsive to a predetermined pressure in the trailer supply line for termination of the pressure signal communicated to the trailer service brakes to effect release thereof upon repressurization of the trailer supply line to said predetermined pressure.

4,258,960

WOUND GLASS FILAMENT REINFORCED RESIN SLIP SLEEVE LINER

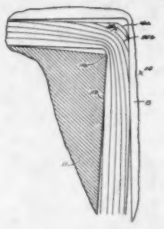
Bernard Harris, Bayside, Wis., assignor to Rexnord, Inc., Milwaukee, Wis.

Continuation of Ser. No. 730,053, Oct. 6, 1976, abandoned. This application Dec. 1, 1977, Ser. No. 856,439

Int. Cl.[3] F16C *33/00*; B32B *31/00*; D03D *13/00*; B65H *81/00*

U.S. Cl. 308—238 1 Claim

1. In a low-friction axial bearing liner comprising a number of flat sides and intermediate corners forming a tubular structure having open ends and dimensioned to be inserted between rotationally driving and driven inner and outer elements and with some clearance therebetween for assembly and operating purposes such that only portions of the flat sides adjacent to the corners are subject to crushing by a torque load, a cured epoxy resin body forming said structure and having layers of helical glass filament reinforcing embedded therein, the inner layers extending around each corner being continuous from one end to the other end of the liner, the outer layers extending diagonally across the corners of the liner, the intermediate



layers extending around each corner of the liner terminating intermediately of said ends thereof, said inner and intermediate layers providing the reinforcement of said portions of the liner against crushing by a torque load which may be applied to the liner in either direction while allowing limited distortion of the liner which is due to the geometrical displacement of the liner relative to the associated inner and outer elements resulting from their assembly and operating clearances.

4,258,961

MAGNETIC TAPE CASSETTE CONTAINER SUPPORT

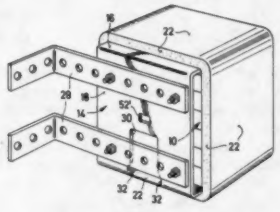
Peter Ackeret, Künacht, Switzerland, assignor to IDN Inventions and Development of Novelties AG, Chur, Switzerland

Filed Dec. 18, 1978, Ser. No. 970,432

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757249; Nov. 21, 1978, 2850387

Int. Cl.[3] A47B *81/06*; B65D *81/02*

U.S. Cl. 312—111 26 Claims



1. A support arrangement for a plurality of containers each adapted to house a magnetic tape cassette which may be removed from the container through an opening at the front thereof, said plurality of containers defining a substantially rectangular block having a front face in which said openings are located, and the block also having a first pair of opposite top and bottom sides and a second pair of opposite lateral sides adjoining the top and bottom sides, the top, bottom and lateral sides defining the circumference of the block, and the block also having a back side opposite the front face, the arrangement comprising

a broad and flat sheath of elastic material in a closed loop stretched about the circumference of the block of cassette containers and extending substantially from the back side to the front face of the block and leaving the front openings of the containers uncovered, the elastic sheath engaging at least one pair of opposite sides of the block of containers in frictional gripping relation and holding the containers together in substantially unremovable relationship to each other, and

mounting means for releasably connecting the block of containers to a holder, said mounting means disposed at one of the sides of the block of containers whereby to

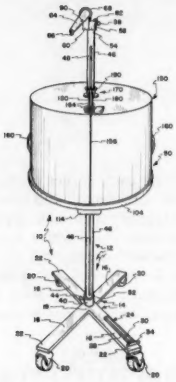
allow continued access into the containers through the front openings thereof.

4,258,962

CAROUSEL TOOL AND PARTS KIT

Mervin J. Slaugh, 1232 N. 3500 West, Vernal, Utah 84078

Filed Nov. 5, 1979, Ser. No. 91,238
Int. Cl.[3] B62D *53/06*; A47B *57/06*
U.S. Cl. 312—125 **13 Claims**



1. A tool and parts kit for on site use by a mechanic comprising:

elongated generally vertically extending stand means;

tool and parts storage compartment means, at least a portion of which concentrically surrounding a portion of the elongated stand means, the compartment means comprising a disc-shaped base plate and a plurality of angularly related substantially vertically directed walls, the lower edge of the walls being essentially in a plane containing the upper surface of the base plate and the base plate and the walls each providing a plurality of tool-receiving sites;

means by which the elevation of the entire compartment means may be vertically adjusted along the erect elongated stand means to any one of an infinite number of positions;

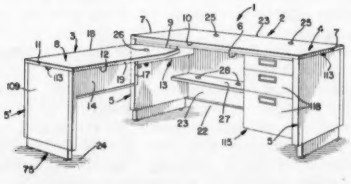
means by which the entire compartment means are caused to be rotated about the elongated stand means to any desired one of an infinite number of radial positions.

4,258,963

ADJUSTABLE DESK

Robert M. Fusselman, and Leo Terlecki, both of Youngstown, Ohio, assignors to GF Business Equipment, Inc., Youngstown, Ohio

Filed Oct. 1, 1979, Ser. No. 81,252
Int. Cl.[3] A47B *47/04*
U.S. Cl. 312—194 **28 Claims**



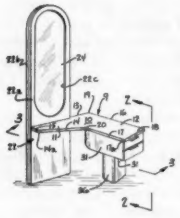
1. An adjustable desk assembly including, a desk top having opposite end edges and front and rear edges, an end support assembly secured beneath said top adjacent each said end edge, an extension provided with a top attached to said desk and having inner and outer ends, beneath said desk top and substantially inwardly of said desk top front edge, an end support assembly secured beneath said extension top adjacent said outer end, said mounting assembly including a desk bracket attached to the undersurface of said desk top adjacent said front edge and projecting outwardly beyond said desk top front edge, an extension bracket attached to the undersurface of said extension top adjacent said desk front edge, vertically and arcuately displaceable means on said extension bracket joined to said desk bracket and having a vertical axis disposed outwardly of said desk top front edge, and manually operable actuating means on said mounting assembly shiftable from a first position defining limits of horizontal arcuate displacement of said extension bracket and its attached top, to a second position allowing vertical displacement of said extension bracket and its attached top relative said desk top whereby, operation of said actuating means allows selective horizontal and vertical displacement of said extension top about said vertical axis with said extension top inner end remaining beneath said desk top.

4,258,964

MODULAR CABINET WITH MIRROR

Theodore A. Cowen, Jr., and Thomas F. McCartan, both of Belvidere, Ill., assignors to Belvedere Company, Inc., Belvidere, Ill.

Filed Jul. 19, 1979, Ser. No. 58,827
Int. Cl.[3] A45D *44/02*
U.S. Cl. 312—224 **21 Claims**

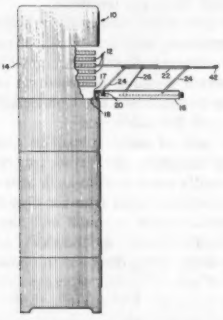


1. A modular beautician's cabinet for use with a beautician's chair in a beauty parlor, the cabinet comprising, a generally horizontal chevron shaped counter top defining a first counter top portion located in front of the chair and second counter top portion interconnected at one end to the first counter top portion and extending at an obtuse angle to the first counter top portion and in diverging relation to one side of the chair when the chair front faces the first counter top portion, the first counter top portion having a first rear edge and a first front edge and a first end edge at a first end of the counter top, the second counter top portion having a second rear edge and a second front edge and a second end edge at a second end of the counter top, the second rear edge extending at an included angle of 120° relative to the first rear edge, a first support means attached to the first counter top portion and a second support means attached to the second counter top portion for supporting the counter top on a floor, a mirror, mirror mounting means mounting the mirror on the cabinet to extend above the first counter top portion in a plane adjacent to and paralleling said first rear edge and at an angle of 120° to said second rear edge, and storage means below said second counter top portion for beautician accessories and supplies.

4,258,965
ADJUSTABLE ELECTRONIC CIRCUIT CARD SUPPORTER

Harry I. Stoner, Aloha, Oreg., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 3, 1979, Ser. No. 63,872
Int. Cl.[3] A47B *49/00, 91/00*
U.S. Cl. 312—266 2 Claims

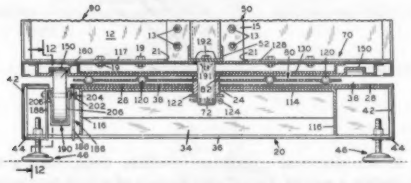


1. An adjustable circuit card support structure adapted to be supported on an electronic cabinet having a plurality of stacked circuit card sections with a cross bar member adjacent the front of the cabinet between each of the sections, comprising: a base support member; a means for leveling the base support member; a means for securing the base support member on one of said cross bar members; a shelf member secured to said base support member; a plurality of link members secured to said base support member and said shelf member; and a lever arm pivotably supported on said base support member having a means for rotating the lever arm around said pivotable support to raise and lower the shelf.

4,258,966
BEARING SYSTEM AND LOCKING MECHANISM FOR ROTARY STORAGE CABINET

Frederick H. Grubb, Jr., Stuarts Draft, Va., assignor to Acme Visible Records, Inc., Crozet, Va.

Filed Oct. 6, 1978, Ser. No. 949,227
Int. Cl.[3] A47B *46/00, 49/00;* A47F *3/10*
U.S. Cl. 312—305 2 Claims

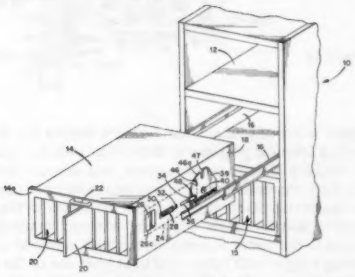


1. In a rotary storage cabinet having a stationary housing with openings in two opposite sides and a rotor mounted for rotation in said housing and wherein said rotor has four sides with two opposite sides positionable to present the contents of the cabinet to the openings in said housing and said rotor also having two other opposite sides positionable to close the openings in said housing, the improvement comprising said housing having a base, said rotor having a rectangular base with an upper and an under surface, said rotor base being supported for rotation relative to said housing base, a groove in said under surface spaced inwardly from the periphery of the rotor base and extending substantially completely around said under surface, a lock pin mounted in the housing base for vertical reciprocating motion to and from a first and second position, said lock pin when in said first position engaging said groove to prevent rotation of said rotor, said lock pin in said second position being retracted from engagement with said rotor base whereby rotation of said rotor is permitted, lock means actuatable to effect movement of said lock pin to and from said positions, and said groove defining a rectangle in said under surface whereby said groove aligns with said lock pin in four positions of said rotor.

4,258,967
INTEGRAL PIVOT AND LOCK APPARATUS FOR SLIDE RACK MOUNTED BOXES

Ronald B. Boudreau, Shirley, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Nov. 2, 1979, Ser. No. 90,725
Int. Cl.[3] A47B *88/00*
U.S. Cl. 312—322 4 Claims



1. In a housing having a frame for supporting at least one mounting box, the box being mounted on at least one slide rack attached to the frame such that the box can be slidably extended out of and into the housing, apparatus for pivoting and locking the extended box in any of a plurality of positions, comprising:

a positioning means, having a plurality of locking positions and fastened to the slide rack;

a pivoting means, secured to the positioning means, and attached to the mounting box such that the box may be rotated about the pivoting means when the slide rack is extended from the housing; and

a locking means integrally located in the mounting box for slidably engaging the locking positions in the positioning means, such that the locking means may be disengaged from a first locking position for rotating the mounting box and re-engaged into another of the locking positions to lock the box in a second locking position, each locking position forming a different angle with respect to the plane of the slide rack.

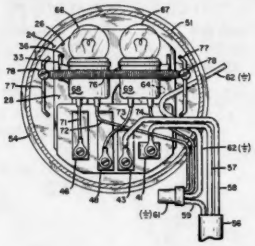
4,258,968
GENERATOR ADAPTOR

Kenneth M. Holt, 1623 River Rd. NW., East Grand Forks, Minn. 56721

Filed Apr. 13, 1979, Ser. No. 29,786
Int. Cl.[3] H01R *11/00*
U.S. Cl. 339—14 L 10 Claims

1. An improved adaptor for selective connection of an auxiliary electric power source to a meter receptacle of a type normally connected between the supply and load lines of a primary electric system, in which the meter receptacle includes a set of forwardly facing load socket terminals connected to the load lines and a set of forwardly facing supply socket terminals connected to the primary incoming electric supply lines, and in which said socket terminals normally receive corresponding rearwardly projecting stab terminals of

an electric meter unit for connecting the primary supply and load lines to each other through said meter unit, said adaptor comprising a first set of rearwardly projecting stab terminals adapted to fit the load socket terminals of the meter receptacle and a second set of rearwardly projecting stab terminals adapted to fit the meter receptacle supply socket terminals for selective mounting of the adaptor in such meter receptacle in place of such an electric meter unit when the unit has been removed, said adaptor having an auxiliary electric supply line with supply wires respectively connected at one end to said first stab terminals for connection thereby to said load lines, the



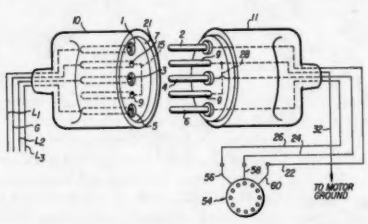
supply wires of said auxiliary electric supply line having connecting terminal portions at their other ends for connection to an auxiliary electric power source, said adaptor having a construction preventing any current transmitting connection from the meter receptacle supply socket terminals to the first set of adaptor stab terminals while the adaptor terminals are connected to the meter receptacle terminals, and said adaptor also having a signal unit connected to at least one of the stab terminals of the second set, the signal unit providing a signal responsive to availability of electric current in the incoming electric supply lines.

4,258,969

REVERSING PLUG CONNECTOR

Jerrel L. Stallard, 4716 Mountain Rd., N.E., Albuquerque, N. Mex. 87110

Filed Nov. 19, 1979, Ser. No. 95,361
Int. Cl.³ H01R *29/00*
U.S. Cl. 339—14 P **7 Claims**



1. A reversing connector for a three-phase alternating current motor comprising:

(a) a first connector member having five pin terminals embedded therein in a straight line, said pin terminals extending outward from a face of said first connector member;

(b) a first multi-connector cable for connection at one end thereof to the terminals of a three-phase alternating current motor, the other end of said first cable being embedded in said first connector member, each of three conductors of said first cable being connected to one of a group of three separate pin terminals in said first member;

(c) a second connector member having five socket terminals embedded therein dispersed in a matching straight line to said pin terminals in said first connector member for receiving said pin terminals, the central terminal in each connector member being a phase terminal;

(d) a second multi-conductor cable for connection at one end thereof to a source of three-phase alternating current, the other end of said second cable being embedded in said second member, each of three conductors of said second cable being connected to one of a group of three separate socket terminals in said second member, said three socket terminals being disposed to match the location of and to connect with three pin terminals;

(e) a further pair of pin terminals constituting ground connection terminals, said further pair of pin terminals being internally connected to each other within the body of said first connector member disposed on either side of the central pin terminal and also connected to a fourth conductor in said first cable; and

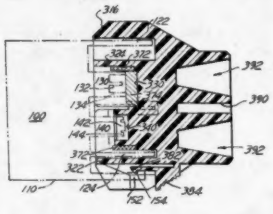
(f) a further pair of socket terminals constituting ground connection terminals, said further pair of socket terminals being internally connected to each other within the body of said second connector member disposed on either side of the central socket terminal and also connected to a fourth conductor in said second cable, said further pair of socket terminals being disposed to connect with said further pair of pin terminals whereby joining of the two connector members will cause a three-phase alternating current motor to rotate in a given, predetermined direction and rotation of one of said connector members 180° will cause reversal of two of said phase connections and reversal of direction of rotation of said motor.

4,258,970

ELECTRICAL CABLE AND MOLDED PROTECTION CAP ASSEMBLY

Normand C. Bourdon, Unadilla, and Donald H. Gould, Sidney, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 5, 1979, Ser. No. 17,750
Int. Cl.³ H01R *13/52*
U.S. Cl. 339—38 **5 Claims**



1. An electrical connector assembly comprising a body including a pair of coaxial cables, each of which terminates in a two-terminal contact facing forward, said body including a forward projection and at least one lug extending radially spaced from the projection and axially forward from said body; and

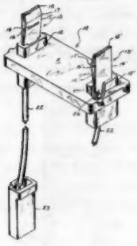
a molded cap of polymeric material for protecting the terminals, said cap including a recess for receiving the projection and a pair of cavities, each for receiving one of the contacts, said cap including an integral latch mounted on an external portion of the cap and being pivotally coupled thereto to allow resilient deflection between a first position to lock the lug against axial movement between the cap and the body and a second position in which the cap and the body are allowed to move axially.

4,258,971

SOCKET FOR BULB WITH BENT WIRE TERMINALS

John A. Speaker, Mequon, Wis., assignor to J. W. Speaker Corp., Milwaukee, Wis.

Filed Jan. 12, 1979, Ser. No. 3,044
Int. Cl.³ H01R *4/48*
U.S. Cl. 339—52 S **7 Claims**



1. A socket for a light bulb having a bent wire terminal at each end includes:

(a) a base having a pair of integral sleeves that are spaced apart along an axis of the base;

(b) a female terminal in each of the sleeves, each female terminal being adapted for connection to a power source;

(c) a pair of opposed, electrically conductive leaf springs, each of the leaf springs having an end portion positioned within its own sleeve and secured in the female terminal in the sleeve, the leaf springs being yieldable in opposite directions along the base axis; and

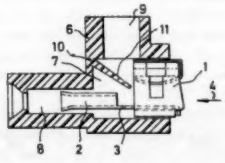
(d) a pair of opposed bulb retaining members, each of the bulb retaining members being positioned inboard of a respective leaf spring and having an end portion secured within the same sleeve as its adjacent leaf spring, the bulb retaining members each having a bent wire terminal receiving slot so that when a bulb is properly positioned between the bulb retaining members the bent wire terminals of the bulb extend in opposite axial directions through slots in respective bulb retaining members and into electrical contact with respective yieldable leaf springs, which grip the bulb therebetween.

4,258,972

ELECTRICAL SOCKET CONNECTOR

Klaus Strate, Detmold, Fed. Rep. of Germany, assignor to C. A. Weidmuller KG, Detmold, Fed. Rep. of Germany

Filed Nov. 20, 1978, Ser. No. 962,418
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1977, 2753172
Int. Cl.³ H01R *13/42*
U.S. Cl. 339—59 R **4 Claims**



1. An electrical socket connector having a screw connector comprising

(a) a clamping screw;

(b) a terminal member having an internal space;

(c) a socket electrically conductively connected to said terminal member, said socket having a bore situated in alignment with said internal space of said terminal member and with the insertion direction of an electric conductor to be secured in said terminal member, said bore being substantially perpendicular to the screwing direction of said screw;

(d) a housing of plastic material provided with correspondingly branched apertures for the insertion of said terminal member together with said socket and said screw; and

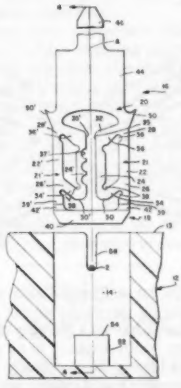
(e) a partition which, prior to installation of said socket and said terminal member, extends downwardly at an angle from the corner between the apertures for said socket and said screw into the aperture for said terminal member and away from said socket, said partition being integrally injection-molded in said housing.

4,258,973

CONNECTING MEANS HAVING KINEMATIC CONDUCTOR-CONTACTING PORTIONS

Charles E. Reynolds, Mechanicsburg, and Robert C. Swengel, Jr., York, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 7, 1979, Ser. No. 46,300
Int. Cl.³ H01R *4/28*
U.S. Cl. 339—95 R **10 Claims**



1. An electrical terminal which is applicable to a conductor to establish electrical contact with said conductor, said terminal comprising:

a one-piece sheet metal member having spaced-apart leading and trailing ends,

first and second integral four-bar linkage mechanisms between said ends, each of said mechanisms comprising a connecting link, first and second crank links, and a fixed link, said linkage mechanisms being located in a common plane and being substantially symmetrical with respect to an axis extending between said first and second ends, said connecting links being adjacent to, and extending substantially parallel to, said axis, said connecting links being spaced from each other, said fixed links being spaced from, and extending parallel to, said axis, each of said connecting links and fixed links having a leading end which is adjacent to said leading end of said terminal and a trailing end which is adjacent to said trailing end of said terminal,

each of said first crank links of each mechanism extending from the leading end of the associated connecting link to the leading end of the associated fixed link, and each of said second crank links extending from the trailing end of the associated connecting link to the trailing end of the associated fixed link, all of said crank links extending diagonally away from said leading end and away from said axis,

each of said connecting links and said crank links being

movable relatively towards said trailing end of said terminal with concomitant movement of said connecting links laterally towards each other upon application of a deforming force to said leading ends of said connecting links in a direction parallel to said axis,

said terminal being flat and having been produced by removing material from flat sheet metal stock without bending, said terminal being of reduced thickness at said leading end to permit application of said deforming force to said leading ends, of said connecting links whereby,

upon placing said conductor between said connecting links and application of said deforming force to said connecting links, said connecting links will move against, and into clamping engagement with, said conductor and establish electrical contact with said conductor.

4,258,974

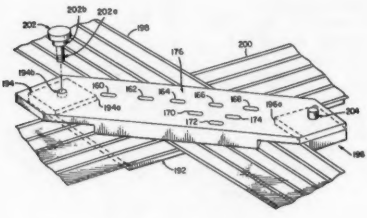
INSTALLATION KIT FOR UNDERCARPET WIRING SYSTEM

Ted L. C. Kuo, Fanwood; Raymond F. Piasecki, Leonardo, both of N.J., and Michael A. Grundfest, Forest Hills, N.Y., assignors to Thomas & Betts Corporation, Raritan, N.J.

Filed May 25, 1979, Ser. No. 42,545

Int. Cl.³ H01R *11/24;* H01B *7/18*

U.S. Cl. 339—97 R **24 Claims**



1. A kit of parts for use in the installation of a wiring system, comprising:

(a) flat electrical cable having a plurality of elongate conductors of common width disposed in an electrically insulative casing and having an electrically conductive shield displaceably overlying said casing and electrically connected to one of said conductors;

(b) electrical connectors, each having insulation piercing expanse and thereby adapted to pierce said casing and electrically engage said cable when crimped upon a surface of said casing, the insulation piercing expanse of each said connector for each such cable surface being no greater than a square of side length equal to such common conductor width; and

(c) flat spacer means comprised of electrically insulative material and having a first surface adapted to contiguously overlie said cable surface, said spacer means having a second surface spaced from said first surface and covering portions of said connectors exterior to said cable surface on such crimping of said connectors thereon, thereby insulating electrically such connector portions from said shield.

4,258,975

DUAL CABLE AND SUBSTRATE CONNECTOR

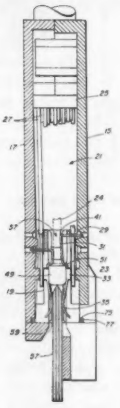
John J. Anderton, Oil City, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Sep. 10, 1979, Ser. No. 74,187

Int. Cl.³ H05K *1/12*

U.S. Cl. 339—97 P **16 Claims**

1. A connector of the type having terminals adapted to be terminated to individual conductors of a cable and to conductive portions on opposite faces of a substrate comprising: a cover having a front and back section forming a cavity therebetween for accommodating a substrate, means positioning a plurality of individual conductors along respective substantially parallel and spaced planes within said cavity, an elongated insulating body held in assembled relationship interposed said front and back sections, a plurality of terminals, each of said terminals having a retaining portion, a conductor engaging portion at one end thereof, and a substrate engaging portion intermediate said conductor engaging portion and said retaining portion, a connect portion at the other end thereof for connecting the terminals to contacts of another connector, said body including a plurality of slots for securing said retaining portions, said body and said retaining portions being fixedly mounted with respect to said front and back sections whereby said terminals are arranged along a pair of rows with the conductor engaging sections of each row facing outwardly and adapted to engage individual conductors and with the substrate engaging portions of each row facing inwardly and adapted to engage conductive portions on opposite faces of a substrate, said body includes an elongated upper opening for receiving conductive portions on opposite sides of a substrate, said substrate engaging sections being bowed inwardly into said opening for engaging said conductive portions on said substrate.



4,258,976

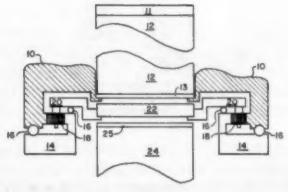
DEROTATION PLATE

David A. Scott, and Lyman F. Van Buskirk, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 6, 1978, Ser. No. 958,231

Int. Cl.³ G02B *5/16*

U.S. Cl. 350—96.20 **10 Claims**



1. An apparatus for transmitting signals between a rotating member and a stationary member comprising;

generation means mounted in said rotating member for initiating a two-dimensional signal representative of a predetermined signal;

a mounted bundle connected to said generation means for transmitting said two-dimensional signal;

means for transmitting said signals from said rotating mounted bundle connected to said rotating mounted bundle;

a half-speed carrier connected to said rotating member for converting said rotating member's rotation speed to half that rotation speed for said carrier;

a derotation plate physically connected to the half-speed carrier so as to rotate at the same speed as said carrier and positioned to receive said transmitted signal from said rotating bundle, for transmitting an inverted signal from that received;

means for receiving said inverted signal from said derotation plate connected to said stationary member; and

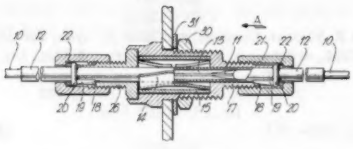
a receiving bundle which is part of the stationary member and connected to said receiving means for processing said transmitted inverted signals from said receiving means.

4,258,977

OPTICAL FIBRE CONNECTOR

Helmut H. Lukas, Carleton Place; Jaroslav M. Hvezda, and Jack F. Dalgleish, both of Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jul. 21, 1978, Ser. No. 926,834
Claims priority, application Canada, Jun. 5, 1978, 304727
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.21 **36 Claims**



1. An optical fiber connector for connecting ends of at least one pair of single optical fibers in end-to-end alignment, comprising:

two tubular ferrules, a ferrule for each fiber end, each ferrule including datum positions extending along the ferrule and spaced apart around the periphery, and further including material in the ferrule defining a fiber receiving bore, said bore a close fit on a fiber end and having a predetermined positional relationship relative to said datum positions;

locating means on each ferrule, said locating means having a predetermined positional relationship with said datum positions;

an elongate alignment member having a center section of constant cross-section normal to the length of the member and inclined end sections, the end sections including opposed, spaced, datum surfaces for engagement with said datum positions on said ferrules;

means for engaging with said locating means on each ferrule to rotationally locate said ferrules relative to said alignment member and to rotationally align said locating means; and

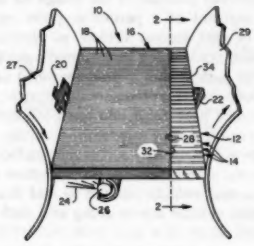
means for urging said ferrules into said center section of said alignment member, in end-to-end relationship, with said datum positions in contact with said datum surfaces.

4,258,978

IMAGE REVERSING ARRAY UTILIZING GRADIENT REFRACTIVE INDEX ELEMENTS

Henry B. Cole, East Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Filed Dec. 5, 1978, Ser. No. 966,675
Int. Cl.³ G02B *5/17*; G03B *27/00*
U.S. Cl. 350—96.25 **10 Claims**



1. An image reversing array of elongated juxtapositioned optical elements each comprising:

a light-conducting core component having a rectilineal cross-sectional configuration and a gradient index of refraction varying approximately as a parabolic function only in one direction across said component from one of a first pair of opposite sides thereof to the other side, the maximum value of said refractive index being approximately centrally of said component; and

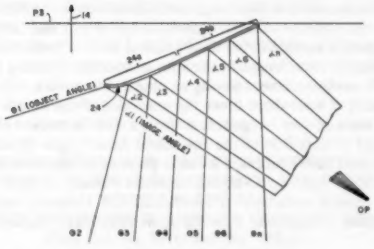
means on a second pair of opposite sides of said component for providing internally light-reflecting interfaces along said second pair of sides whereby the optical element provides imaging properties in the direction of its length and light-containment properties in directions thereacross.

4,258,979

REAR VIEW MIRROR ASSEMBLY

William E. Mahin, 155 Ashland Acres Rd., Ashland, Oreg. 97520

Filed Dec. 8, 1978, Ser. No. 967,601
Int. Cl.³ G02B *5/10*
U.S. Cl. 350—293 **28 Claims**



1. A rear view mirror assembly, comprising:

(a) a mounting structure adapted for connection to one side of a first vehicle in a fixed position relative to a predetermined observation point within the vehicle;

(b) a mirrored surface supported by said mounting structure for viewing a second vehicle from said observation point when said first vehicle is in a given lane, said second vehicle being in a next adjacent lane along a substantially straight path behind said mirrored surface; and

(c) said mirrored surface including a segment which is curved in any horizontal plane therethrough, the horizontal curvature of said segment defining cooperating object

and image angles associated with each point along its horizontal extent with respect to said observation point, said angles being selected so as to result in a predesigned continuous decrease in the magnification ratio of and along the entire extent of said curvature in the direction away from said observation point, said predesigned decrease in magnification ratio defining a linear relationship between

(i) the horizontal position of the image on the mirrored surface segment of a particular point on a forward portion of said second vehicle as viewed from said observation point when said second vehicle is located along said path within a predetermined range of distances from said mirrored surface segment, and

(ii) the distance back from said mirrored surface of said second vehicle along said path, whereby said image point moves horizontally across said surface segment at a speed substantially linearly proportionate to the speed of said second vehicle relative to said first vehicle as said second vehicle moves along said path within said range.

4,258,980

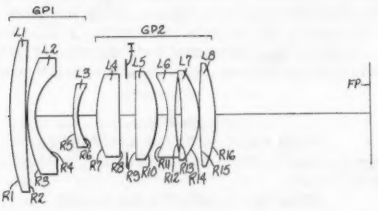
RETROFOCUS LENS

Jacob Moskovich, Cincinnati, Ohio, assignor to Vivitar Corporation, Santa Monica, Calif.

Continuation-in-part of Ser. No. 941,524, Sep. 11, 1978, abandoned. This application Nov. 26, 1979, Ser. No. 97,543

Int. Cl.³ G02B 9/64

U.S. Cl. 350—463 **16 Claims**



1. A retrofocus lens of eight airspaced elements comprising from the object end a first positive meniscus convex to the object, second and third negative menisci convex to the object, a fourth positive element convex to the object and having an image side surface defined on a radius at least three times the equivalent focal length of the lens, an aperture defining means, a fifth postive element having an object side surface defined on a radius at least three times the equivalent focal length of the lens and a convex image side surface, a sixth biconcave element spaced at least 0.04 of the equivalent focal length of said lens from said fifth element, a seventh positive meniscus convex to the image end, and an eighth biconvex element, at least one of said convex surfaces said fourth and fifth elements being defined on a radius less than the equivalent focal length of said lens.

4,258,981

REPRODUCING OBJECTIVE FOR VIDEO DISKS

Atsuo Goto, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 22, 1979, Ser. No. 87,069

Claims priority, application Japan, Nov. 9, 1977, 52/133537

Int. Cl.³ G02B 9/16

U.S. Cl. 350—475 **4 Claims**

1. A reproducing objective for video disks comprising a first, second and third lenses, said first lens being a biconvex lens, said second lens being a negative meniscus lens, said third lens being a positive meniscus lens, said reproducing objective for video disks satisfying the following conditions:

(1) $-1.65f<r_3<-1.00f$

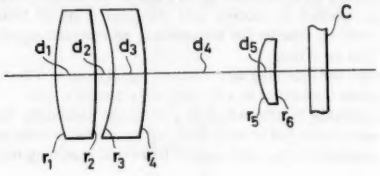
(2) $0.42f<r_5<0.56f$

(3) $f_3<0.8f$

(4) $0.7f<d_4<1.0f$

(5) $1.4f<f_1<1.7f$

(6) $0.1f<d_5<0.19f$



wherein reference symbol r_3 represents the radius of curvature of the surface on the first lens side of the second lens, reference symbol r_5 represents the radius of curvature of the surface on the second lens side of the third lens, reference symbol d_4 represents the airspace between the second and third lenses, reference symbol d_5 represents the thickness of the third lens, reference symbol f_1 represents the focal length of the first lens, reference symbol f_3 represents the focal length of the third lens, and reference symbol f represents the focal length of the lens system as a whole.

4,258,982

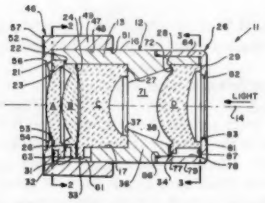
LENS CELL

James R. Skinner, Saratoga, and John D. Lytle, San Jose, both of Calif., assignors to M. U. Engineering & Mfg., Inc., Mountain View, Calif.

Filed May 24, 1979, Ser. No. 41,949

Int. Cl.³ G02B 7/02

U.S. Cl. 350—252 **21 Claims**



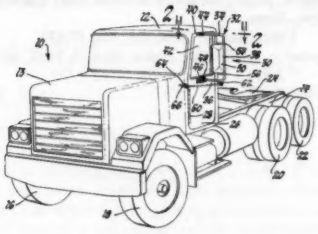
1. In a lens cell for carrying a lens element of the type having spaced apart parallel planar registration faces on opposite ends thereof and at least one sidewardly extending tab, a cell body having a cylindrical wall defining an optical axis for the lens element, said wall being formed with an annular inwardly extending protrusion and providing an annular planar lens element seating surface facing one end of the cell body, said cylindrical wall having at least one slot formed therein and opening through said one end thereof whereby the lens element can be inserted into the cell body with one registration face in engagement with the annular seating surface and with its tab registered in said slot and a retainer secured to said cell body and having an annular seating surface forming a registration surface for the other registration face of the lens element.

4,258,983

REAR VIEW MIRROR ASSEMBLY WITH SUPPORT MEANS CONNECTED TO VEHICLE DOOR AND BODY

James J. Johnson, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 9, 1979, Ser. No. 82,794
Int. Cl.[3] G02B 7/18
U.S. Cl. 350—307 3 Claims



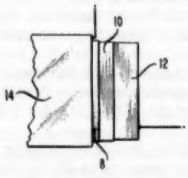
1. In combination with a vehicle having a body portion provided with a door adapted to be moved relative to said body portion about a first vertical axis between an open position and a closed position, a mirror, support means having one end thereof connected to said door for pivotal movement about a second vertical axis spaced rearwardly from said first vertical axis and having the other end extending laterally outwardly relative to said door, means connecting said mirror to the other end of said support means for adjustable movement about a third vertical axis to present a desired view to the rear of the vehicle, and a link having one end pivotally connected to the body portion forwardly of said first vertical axis and having the other end pivotally connected to said support means whereby movement of said door from the closed position to the open position causes said support means to pivot about said second vertical axis towards said door so that the mirror maintains substantially the same angular position relative to the body portion of the vehicle.

4,258,984

IRIDIUM OXIDE BASED ELECTROCHROMIC DEVICES

Gerardo Beni, Westfield; William C. Dautremont-Smith, Cranford; Lawrence M. Schiavone, Howell, and Joseph L. Shay, Holmdel, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 14, 1979, Ser. No. 75,718
Int. Cl.[3] G02F 1/17
U.S. Cl. 350—357 9 Claims



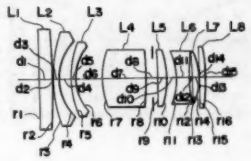
1. A device comprising an electrochromic electrode and a counterelectrode in intimate contact with an electrolyte characterized in that said electrochromic electrode comprises a vacuum deposited iridium oxide film.

4,258,985

INVERTED TELEPHOTO TYPE WIDE ANGLE LENS SYSTEM

Akiyoshi Nakamura, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 4, 1979, Ser. No. 45,433
Claims priority, application Japan, Jun. 16, 1978, 53-73362
Int. Cl.[3] G02B 13/04
U.S. Cl. 350—459 9 Claims



1. An inverted telephoto type wide angle lens system comprising, from the object to image side:

a first lens group consisting, from the object to the image side, of a positive single lens, a first negative meniscus single lens convex to the object side and a second negative meniscus single lens convex to the object side;

a second lens group including at least a positive lens, and

a third lens group consisting, from the object to the image side, of a first positive meniscus single lens convex to the image side, a biconcave single lens, a second positive meniscus single lens convex to the image side and a positive single lens, in which the lens system fulfills the following conditions:

$0.75f <$	$\lvert f_{1,2,3} \rvert$	$< 1.25f$	$f_{1,2,3} < 0$
$10f <$	f_1	$< 20f$	
$6.5f <$	$\lvert r_2 \rvert$	$< 22f$	$r_2 < 0$
$1.3f <$	f_5	$< 1.9f$	

wherein:

$f_{1,2,3}$ represents the focal length of the first lens group;

f_1 represents the focal length of the positive single lens in the first lens group;

r_2 represents the radius of curvature of the image side-surface of the positive single lens in the first lens group;

f_5 represents the focal length of the first positive meniscus single lens in the third lens group; and

f represents the focal length of the whole lens system.

4,258,986

ELECTRIC BOOKS AND MICROFILM STRUCTURES AND THE PRODUCTION THEREOF FOR USE IN ELECTRIC BOOKS

Richard W. Crandall, 150 W. Huron St., Chicago, Ill. 60610

Filed Oct. 20, 1976, Ser. No. 734,100
Int. Cl.[3] G03B 23/12, 21/00
U.S. Cl. 353—26 R 22 Claims

1. A microfilm capsule comprising:

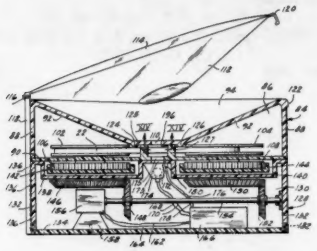
a base plate including an aperture therein for receiving light;

a pair of drums rotatably mounted on said base plate on opposite sides of said light aperture;

a microfilm cord attached to and wound on and off of said drums, said cord including an elongate strip of microfilm having a pair of opposite surfaces extending between a pair of edges and information-bearing sections thereon and transparent protective means encapsulating said strip, said cord wound about said drums such that said surfaces

of said strip are substantially perpendicular to the axes of rotation of said drums;

guide means for guiding said cord over said aperture; and



driven means carried on each of said drums for receiving rotary inputs to rotate said drums and move said cord across said aperture.

4,258,987

PNEUMATIC FILM HOLDING DEVICE

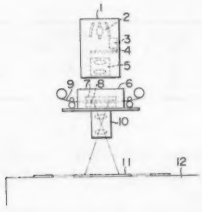
Yukio Nishikawa, 157 Aoshiro-cho, Ichijoji, Sakyo-ku, Kyoto-shi, and Zenji Oyabu, 38 Saiji-cho, Karahashi, Minami-ku, Kyoto-shi, both of Japan

Filed Jul. 5, 1979, Ser. No. 54,678

Claims priority, application Japan, Aug. 18, 1978, 53-113747[U]

Int. Cl.³ G03B *21/16, 1/48*

U.S. Cl. 353—95 **5 Claims**



1. For use in a projector means to project an image of a film, a film holding device to hold the film flat and avoid twist and distortion of the film in a projection space and to reduce the risk of film scratches,

said device comprising,

a first transparent plate having a planar surface, and a second transparent plate having a planar surface parallel to and in confronting relation to said planar surface of said first transparent plate,

an upper clamp member,

said upper clamp member including means to hold said planar surface of said first plate a predetermined distance from said planar surface of said second plate defining a relatively thin film passage space between the planar surfaces,

said upper clamp member having a longitudinally extending recess defining film guide means for longitudinal movement of film in spanning relation of said projection space and between said planar surfaces,

said recess being enlarged defining an entrance mouth into said space and said entrance mouth diverging from said planar surface of said lower transparent plate,

said upper clamp member including a duct network with outlet means opening into said space and facing said planar surface of said second transparent plate, and

means for supplying air into said duct system and from said outlet means into said film passage space to gently hold the film against the planar surface of said second transparent plate.

4,258,988

FOCUSING DEVICE FOR AUTOMATIC FOCUSING CAMERA

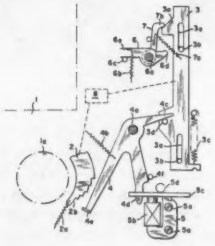
Kiyoshi Kitai; Tadashi Nakagawa, and Hiroaki Ishida, all of Shikawatashi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1979, Ser. No. 17,938

Claims priority, application Japan, Mar. 7, 1978, 53-25666

Int. Cl.³ G03B *7/08;* G01J *1/20*

U.S. Cl. 354—25 **8 Claims**



1. A focusing device, for an automatic focusing camera capable of automatic focusing of the photographic lens by detecting object distance, having an operating member, focus detecting means for focus detection, a control member operated in connection with said operating member to stop the photographic lens at a focus matching position, and an electromagnet connected to said focus detecting means for detecting the focus matching position of the photographic lens, characterized in that said control member is detained at the position corresponding to the focus matching position of the photographic lens by said electromagnet being energized by a signal given by said focus detecting means when said control member is shifted to the position corresponding to the focus matching position of the photographic lens, said electromagnet having an armature and a magnetically attractive face for attracting said armature, and said armature being connected to said control member and positioned to travel adjacent to and parallel to the magnetically attractive face of said electromagnet as said control member is displaced by said operating member, whereby energization of said electromagnet by said focus detecting means is effective to hold said armature in position and fix the in-focus position of said control member.

4,258,989

FOCUS DETECTING DEVICE

Seijiro Tokutomi, Tokyo; Ryota Ogawa, Kawagoe; Michiro Ohishi; Kazuo Nakamura, both of Tokyo; Masao Jyojiki, Tsurugashima, and Satoru Tachihara, Wako, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1979, Ser. No. 33,067

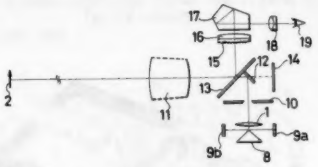
Claims priority, application Japan, May 2, 1978, 53-52994

Int. Cl.³ G03B *13/18, 17/20*

U.S. Cl. 354—25 **11 Claims**

1. A focus detecting device comprising; a release lens for reforming a primary image of an object which is formed relative to a photographing lens and the focal plane of said photographing lens to produce an image reforming plane; a mirror provided optically between said release lens and said image reforming plane for dividing the primary image into two secondary images; a pair of light receiving element arrays provided in the image forming planes of said secondary images;

and signal processing circuit means for subjecting the outputs of said light receiving element arrays to comparison and producing an output signal indicating whether or not said lens is focussed on said object, wherein said two secondary images are shifted in the opposite direction on said light receiving



element arrays if the image is defocussed so that the difference between the outputs of said two light receiving element arrays is not zero, and when the image is focussed said two secondary images are located at equivalent position on said light receiving element arrays so that the difference between the outputs of said two light receiving element arrays is substantially zero.

4,258,990

PROGRAM TYPE ELECTRIC SHUTTER PROVIDED WITH EXPOSURE WARNING INDICATING DEVICE

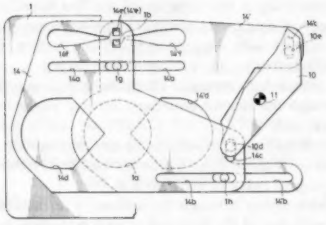
Kunio Arisaka, Urawa, and Kenta Namioka, Tokyo, both of Japan, assignors to Copal Company Limited, Tokyo, Japan

Filed Apr. 20, 1979, Ser. No. 31,966

Claims priority, application Japan, Apr. 21, 1978, 53/46671; Jun. 29, 1978, 53/79042

Int. Cl.³ G03B 7/091

U.S. Cl. 354—29 **3 Claims**



1. A program type electric shutter comprising a shutter plate having an exposure aperture and light receiving window thereon, shutter blades which are also diaphragm blades and are movably supported respectively on said shutter plate and have each shutter opening able to open and close said exposure aperture, a first opening formed on said each shutter blade and aligned with said light receiving window in the normal state, a second opening which is formed adjacently to said first opening on said each shutter blade and can open said light receiving window in response to the variation of the opening area of said exposure aperture, a light receiving element arranged as aligned with said light receiving window, an exposure warning indicating means connected to said light receiving element, and a latch circuit connected between said exposure warning indicating means and light receiving element, said exposure warning indicating device being held to be inoperative by an electric signal issued from said latch circuit at the moment when said first opening retreats from said light receiving window with respect to the opening motion of said shutter blade by the shutter release.

4,258,991

ELECTRONIC FLASH APPARATUS FOR A CAMERA

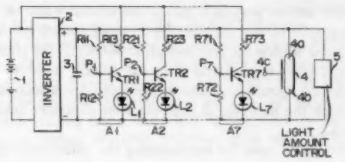
Kaoru Kuraishi, Tokyo, Japan, assignor to Toshiba Photo Products Co., Ltd., Tokyo, Japan

Filed Jun. 7, 1979, Ser. No. 46,454

Claims priority, application Japan, Feb. 9, 1979, 54-13914; Feb. 9, 1979, 54-13915; Feb. 9, 1979, 54-15551[U]

Int. Cl.³ G03B 17/18

U.S. Cl. 354—32 **20 Claims**



1. In an electronic flash apparatus for a camera having a main discharge capacitor, means for charging the main discharge capacitor, a flash discharge tube which is connected in parallel with the main discharge capacitor and is made to radiate light through the discharge of a charge stored in the main discharge capacitor, and a display means for displaying exposure conditions, the improvement wherein said exposure condition displaying means comprises:

a display portion for displaying an F-number corresponding to a film sensitivity;

a portion for displaying a plurality of photographable distances corresponding to the F-number and the charged voltage across said capacitor; and

charged voltage discriminating means which are provided corresponding to the respective photographable distances within a range including at least a part of which said photographable distance display portion and includes a plurality of light emission elements which are stepwisely energized as the charged voltage across said capacitor increases.

4,258,992

AUTOMATIC CONTROL DEVICE FOR A CAMERA HAVING AN ELECTROMAGNETIC RELEASE DEVICE

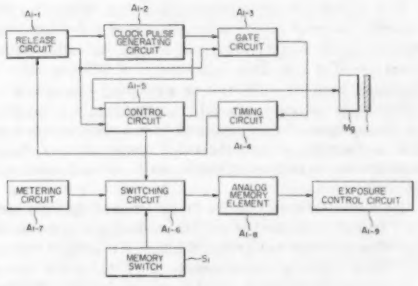
Hiroshi Hasegawa, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 17, 1978, Ser. No. 961,768

Claims priority, application Japan, Nov. 18, 1977, 52-137790

Int. Cl.³ G03B 7/089

U.S. Cl. 354—51 **5 Claims**



1. A camera comprising:

(a) a power source;

(b) a photometering circuit for producing a photoelectric output corresponding to the brightness of an object to be photographed;

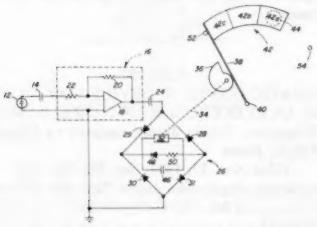
(c) an analog memory element for memorizing the photoelectric output;
(d) an exposure control circuit for automatically controlling exposure in accordance with the photoelectric output memorized in the analog memory element;
(e) a manually operable electromagnetic release device including an electromagnet and switch means for supplying power from the power source to the electromagnet following manual operation;
(f) first memory switch means associated with the electromagnetic release device, the memory switch having a first state in which the photoelectric output of the photometering circuit is memorized in the analog memory element prior to commencement of exposure and a second state in which the memory is released after exposure completion; and
(g) control means for memorizing the photoelectric output from the photometering circuit in the analog memory element independently of the first memory switch, in response to the manual operation and before initiating power supply to the electromagnet.

4,258,993

LIGHT DISCRIMINATION APPARATUS

Lee F. Frank, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 729,624, Oct. 5, 1976, abandoned. This application Jun. 25, 1979, Ser. No. 51,552
Int. Cl.³ G03B 7/081
U.S. Cl. 354—60 A **6 Claims**



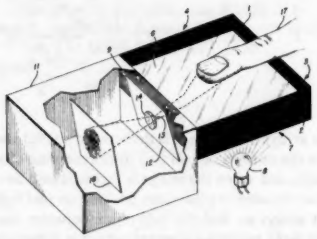
1. In a photographic apparatus of the type in which a photosensitive material having a predetermined color temperature balance can be imagewise exposed to light emanating primarily from one of at least three light sources of differing color temperature, each of such sources exhibiting characteristically different flicker ratios, means for controlling the color balance of photographic images produced from a photosensitive material in accordance with the color temperature of the light source used to imagewise expose such material, said control means comprising:
(a) means for detecting the flicker ratio of the light used to expose such material and for producing a signal having a characteristic indicative of either (1) sunlight, having a flicker ratio of approximately unity, (2) a first source of artifical light having a flicker ratio measurably in excess of unity, or (3) a second source of artificial light having a flicker ratio measurably in excess of the flicker ratio of the first source of artificial light; and
(b) means responsive solely to said signal for altering the color content of light used to produce said photographic images.

4,258,994

HIGH CONTRAST OPTICAL FINGERPRINT RECORDER

Harry L. Task, 5513 Snowbank Cir., Dayton, Ohio 45431

Filed Aug. 3, 1979, Ser. No. 63,875
Int. Cl.³ G03B 29/00
U.S. Cl. 354—75 **8 Claims**



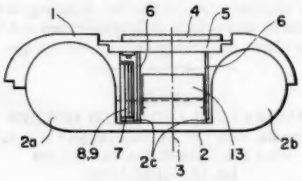
1. An apparatus for detecting contact between an object and a boundary surface, comprising:
a. a body transmissive to electromagnetic energy having an index of refraction n and at least four boundary surfaces;
b. a first medium transmissive to electromagnetic energy, in contact with the first boundary surface, the first medium having an index of refraction n_1;
c. a source of electromagnetic energy in the first medium transmitting in the direction of the first boundary surface;
d. a second medium transmissive to electromagnetic energy, in contact with the second boundary surface, the second medium having an index of refraction n_2;
e. a means for detecting electromagnetic energy passing through the second boundary, located in the second medium;
f. a third medium transmissive to electromagnetic energy, in contact with the third boundary surface, the third medium having an index of refraction n_3;
g. a relationship between the indices of refraction n, n_1 and n_2 such that at the first and second boundary surfaces the electromagnetic energy entering the first boundary surface is refracted to intersect the second boundary surface at an angle greater than the critical angle, undergoing substantially total internal reflection at the second boundary surface;
h. a relationship between the indices of refraction n, n_2 and n_3 such that at said second and third boundary surfaces the electromagnetic energy entering the third boundary surface is refracted to intersect the second boundary surface at an angle greater than the critical angle, undergoing substantially total internal reflection at the second boundary surface;
i. the fourth boundary surface of the body being highly absorbent to incident electromagnetic energy in the region geometrically conjugate to the means for detecting; and
j. the third boundary surface diffusely reflects incident electromagnetic energy internal to the body from all points where an object located in the third medium makes contact with the third boundary surface, and where some of this diffusely reflected energy is incident on the second boundary surface at less than the critical angle.

4,258,995

MIRROR OPERATING MECHANISM IN CASSETTE TYPE SLR CAMERA

Tohru Karikawa, and Mituo Satoh, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 25, 1979, Ser. No. 60,540
Claims priority, application Japan, Sep. 5, 1978, 53-108966
Int. Cl.[3] G03B *19/12*
U.S. Cl. 354—153 10 Claims



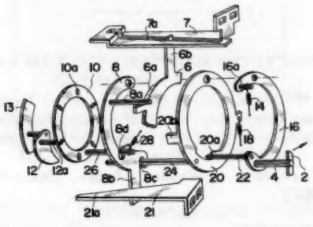
1. In a mirror operating mechanism in a single-lens reflex camera having a photographing lens with an optical axis perpendicular to film in a small film cassette, said cassette having film winding and storage chambers and a picture opening between said chambers, comprising; a main plate having two guide shafts parallel to the optical axis of the photographing lens of said camera, said main plate provided in the space between the picture opening and the film winding chamber of said film cassette; a mirror lifting drive plate slidable along one of said guide shafts and a mirror lowering drive plate slidable along the other of said two guides shafts; and first and second driving coil springs provided in parallel with said two guide shafts, said springs driving said mirror lifting drive plate and mirror lowering drive plate, respectively.

4,258,996

DIAPHRAGM CONTROL MECHANISM FOR CAMERA OBJECTIVES

Kyozo Uesugi, Sakai, and Osamu Tanaka, Hashimoto, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 883,679, Mar. 6, 1978, abandoned. This application Aug. 24, 1979, Ser. No. 69,539
Claims priority, application Japan, Mar. 10, 1977, 52/29238
Int. Cl.[3] G03B *9/02*
U.S. Cl. 354—196 8 Claims



8. A diaphragm control mechanism for camera objective which defines an optical axis and which is adjustable for changing its optical property and which includes diaphragm means for defining a diaphragm aperture, said diaphragm aperture being maintained fully open at the pre-exposure condition of the camera coupled with the objective, and stopped down to a desired size in response to a release operation to the camera, said diaphragm control mechanism comprising:

a driving member for driving said diaphragm means in response to the camera release operation;

a first bias means for urging said driving member in the direction to stop down the diaphragm means, said driving member being retained in a charged position against said first bias means at said pre-exposure condition of the camera;

a link system for transmitting the movement of said driving member to said diaphragm means, said link system being interconnected with the driving member in the manner that said driving member, when moving in said diaphragm stop down direction, pushes said link system;

a second bias means for urging said link system so that said link system follows said driving member when said driving member moves opposite to said stop down direction;

a movable member attached to a part of said link system to extend radially away from said optical axis, said movable member being movable together with said link system; and

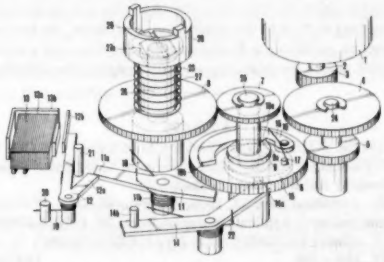
means located in the path of said movable member to be engaged thereby when said link system follows said driving member, and to control, through said movable member and said link system, fully open diaphragm aperture, said movable member and said engageable means being movable relative to one another in the direction different from that of the movement of said movable member with said link system following said driving member, said engageable means being mounted independently of the movement of said link system allowing said movable member to be driven by said driving member.

4,258,997

CAMERA AND ELECTRIC MOTOR DRIVE THEREFOR

Hidehiko Fukahori, Kawasaki; Tomonori Iwashita, Fuchu, and Yukio Mashimo, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1979, Ser. No. 78,764
Claims priority, application Japan, Sep. 28, 1978, 53-119492
Int. Cl.[3] G03B *1/12, 1/00*
U.S. Cl. 354—173 10 Claims



1. For a camera, an electric motor drive settable into a continuous driving mode in which sequences having a shutter release operation and a film winding operation are effected on a continuous basis, and a non-continuous driving mode in which the sequences having the shutter release and film winding operation are non-continuous, comprising:

A. a driving source;

B. a transmission mechanism connected to said driving source and having a transmission linkage , said linkage producing a stressed condition during the film winding operation;

C. cut-off means in said transmission mechanism for cutting off the transmission linkage thereof; and

D. switch-over means operatively connected to said cut-off means for causing said cut-off means to operate at the end of every driving operation in the continuous driving mode and for rendering said cut-off means inoperative in the

non-continuous driving mode between the film winding and shutter releasing operations a period of time sufficient to remove the stressed conditon.

4,258,998

STILL CAMERA WITH AN OBJECTIVE WHICH CAN BE RETRACTED INTO THE CAMERA HOUSING FOR DIMENSIONAL COMPACTNESS

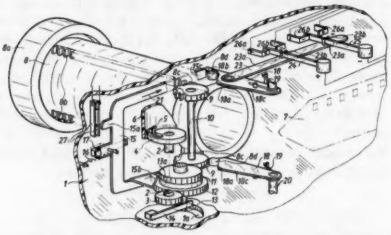
Peter Lermann, Narring; Dieter Engelsmann, Unterhaching; Dieter Maas, Pöring, and Reinhard Nicko, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Nov. 15, 1979, Ser. No. 94,662

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1978, 2849893

Int. Cl.³ G03B *1/12, 13/02*

U.S. Cl. 354—173 **21 Claims**



3. In a photographic camera of the type having a camera housing and an objective mounted for movement between a retracted, inoperative position in which it is retracted into the camera housing for dimensional compactness of the camera and an extended, operative position in which it extends out from the camera, a drive mechanism for driving the objective from one to the other of said positions, the drive mechanism including an electric drive motor and transmission means coupled to the drive motor and to the objective and operative for transmitting motion to the latter from the former, the transmission means including a disengageable coupling and manually activated means for engaging and disengaging the coupling.

4,258,999

POWER SOURCE VOLTAGE CHECKING CIRCUIT

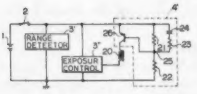
Shinji Tominaga, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 22, 1979, Ser. No. 86,841

Claims priority, application Japan, Nov. 20, 1978, 53-143602

Int. Cl.³ G03B *17/18, 17/38;* **G08B** *21/00*

U.S. Cl. 354—268 **13 Claims**



1. A voltage checking circuit for a power source battery which supplies current to a load circuit and whose terminal voltage changes with time subsequent to the initiation of current drain from the battery, said voltage checking circuit comprising:

a voltage generating means connected to said power source battery for generating a predetermined voltage in response to the change of the terminal voltage of said power source battery when said power source battery is at a critical condition showing a critical effective level while it supplies power to said load at its steady state, said voltage generating means generating a higher or lower level signal for the power source battery not at the critical condition; and

a voltage discriminating means for detecting the voltage generated by said voltage generating means and for generating an output in accordance with the voltage.

4,259,000

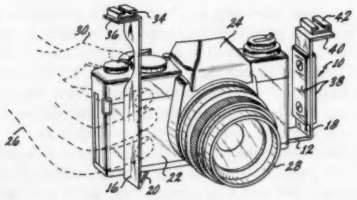
CAMERA GRIP AND FLASH HOLDER

R. Victor Heredia, 3260 "F" St., San Diego, Calif. 92102

Filed Feb. 7, 1980, Ser. No. 119,358

Int. Cl.³ G03B *17/56*

U.S. Cl. 354—293 **10 Claims**



1. A camera grip for use in combination with a camera having a threaded opening in it's bottom surface, said camera grip comprising:

a base piece having a flat camera engaging surface, said base piece underlying the body of the camera over a first portion of it's length and having an angular offset on the second portion of it's length to position the shutter related end of said base piece forwardly of the camera body, said base piece and said offset being coplanar, and an upstanding finger grip element extending upwardly from the offset end of said base piece;

means for securing said base piece to the underside of said camera through the threaded opening;

said offset being dimensioned to position said finger grip element in front of said camera body and offset from the lens barrel thereof in position to be gripped by the fingers of a hand holding the camera, whereby the camera can be held and operated by one hand.

4,259,001

ACTUATING LEVER STOPPING DEVICE OF A CAMERA SHUTTER MECHANISM

Masanori Watanabe; Tadashi Nakagawa; Ichiro Nemoto; Eiichi Onda, and Mitsuo Koyama, all of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1976, Ser. No. 755,452

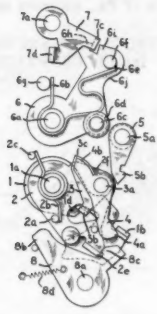
Claims priority, application Japan, Dec. 29, 1975, 50/180022[U]

Int. Cl.³ G03B *9/08*

U.S. Cl. 354—266 **6 Claims**

1. In a camera shutter mechanism: a shutter actuating lever mounted for rotation about an axis and movable between a cocked position and a rest position to actuate the camera shutter mechanism; and a cocking lever positioned adjacent said actuating lever when the same is in the rest position, mounted for rotation about an axis fixed relative to the axis of rotation of said actuating lever and movable to abut said actuating lever and move said actuating lever from the rest position to the cocked position, said cocking lever including abutting means

for abutting said actuating lever for moving said actuating lever from the rest position to the cocked position when said cocking lever is moved, said cocking lever and said actuating lever together including locking means for releasably locking said actuating lever to said cocking lever when said actuating lever is in the rest position to prevent said actuating lever from rebounding from the rest position and for releasing said actuating lever from said cocking lever when said cocking lever is



moved to move said actuating lever to the cocked position, and said abutting means and said locking means relatively positioned so that said actuating lever bears against said abutting means and moves said cocking lever in a direction to actuate said locking means and lock said actuating lever in the rest position when said actuating lever is biased toward the rest position before said cocking lever is moved to release said locking means.

4,259,002

PLATE PROCESSING APPARATUS

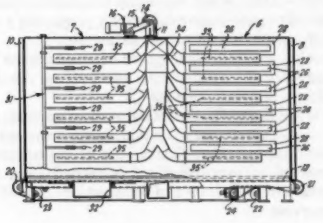
Clive S. Thawley, 5 Robertson Ave., Dumfried, Scotland; Kenneth Graham, 14 Canterbury Ave., Lowton Saint Lukes, Near Warrington, England, and Austin Brittain, 25 Minden Crescent, Georgetown Rd., Dumfries, Scotland

Filed Feb. 7, 1980, Ser. No. 119,242

Claims priority, application United Kingdom, Feb. 9, 1979, 04704/79

Int. Cl.³ G03D *5/02*

U.S. Cl. 354—319 **13 Claims**



1. Apparatus for simultaneously treating the surface of a plurality of plates, the apparatus comprising a carrier for supporting the plates in spaced relationship one above another, an enclosure having first and second compartments each capable of accommodating the carrier loaded with the plates, a door closing the compartments one from the other, means for opening the door to allow transfer of the carrier from the first to the second compartment, means for effecting transfer of the carrier from the first to the second compartment, and first and second plate treatment systems associated respectively with the first and second compartments, at least one of the treatment systems comprising a series of treatment means mounted one above another in the respective compartment to interdigitate with the plates on the carrier.

4,259,003

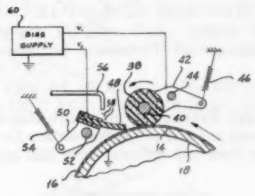
IMAGING SURFACE DISCHARGE AND CLEANING APPARATUS FOR ELECTROPHOTOGRAPHIC COPIER

Norman F. Mangal, and Ronald Swidler, both of Palo Alto, Calif., assignors to Savin Corporation, Valhalla, N.Y.

Filed Aug. 6, 1979, Ser. No. 64,175

Int. Cl.³ G03G *15/00, 21/00*

U.S. Cl. 355—3 CH **21 Claims**



1. In an electrophotographic copier having a photoconductor carried by a conductive substrate, means for forming an electrostatic latent image of a first polarity on the surface of said photoconductor, means for developing said latent image, and means for transferring a substantial portion of said developed image from said surface to a carrier sheet, said surface retaining a residual of the electrostatic charge of said latent image following transfer of said developed image, the improvement comprising means for disposing a conductive member adjacent to said surface in electrical contact therewith following said transfer, said photoconductor offering substantially less resistance to a surface charge of a second polarity opposite to said first polarity than said conductive member, and means for applying an electrical potential of said second polarity to said conductive member relative to said substrate, said photoconductor and said substrate being so formed that said photoconductor offers substantially less resistance to a surface charge of said second polarity than to a surface charge of said first polarity.

4,259,004

SCANNING DEVICE WITH OPTICAL PATH LENGTH COMPENSATOR

Masamichi Tateoka, Kawasaki; Toshiaki Asano; Kazuo Minoura, both of Yokohama, and Setsuo Minami, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1979, Ser. No. 48,257

Int. Cl.³ G03G *15/30*

U.S. Cl. 355—8 **9 Claims**

1. A scanning device comprising:

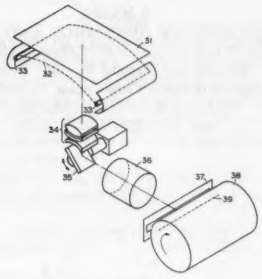
a flat scanned surface;

a deflector for deflecting a light beam from said scanned surface into a predetermined direction, said deflector performing its deflecting function by the deflecting surface thereof rotating about an axis of rotation;

a rotational asymmetric first image forming optical system disposed between said scanned surface and said deflector, the position of the image of said scanned surface formed by said first image forming optical system lying at a substantially equal distance from the deflecting surface of said deflector in a scanning plane defined by the path of movement of the normal to the deflecting surface of said deflector with the deflecting action of said deflector;

a projection surface onto which the light beam deflected by

said deflector is projected at a predetermined position sequentially with time; and



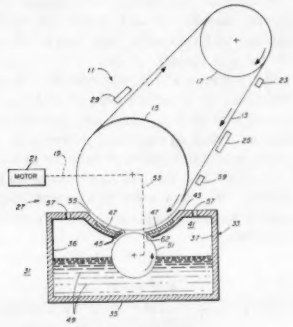
a second image forming optical system disposed between said deflector and said projection surface for imaging the light beam from said deflector onto said projection surface.

4,259,005

DEVICE AND METHOD FOR DEVELOPING LATENT ELECTROSTATIC IMAGES

Manfred R. Kuehnle, Lexington, Mass., assignor to Coulter Systems Corporation, Bedford, Mass.

Filed Dec. 1, 1978, Ser. No. 965,328
Int. Cl.[3] G03G *15/10*
U.S. Cl. 355—10 **9 Claims**



1. A device for use in developing a latent electrostatic image formed on the image bearing surface of an electrophotographic belt with liquid toner as said surface is moving through an arcuate path comprising:

a. a generally enclosed container for holding a quantity of liquid toner, said container having a top wall including a concave arcuate shaped recessed top wall portion whose curvature conforms to the configuration of curvature of said arcuate path in which the image bearing surface is moving, said concave arcuate shaped recessed top wall portion being concentric with said arcuate path and closely spaced therefrom to define a uniform toning gap therebetween, said top wall recessed portion having an elongate slot therein;

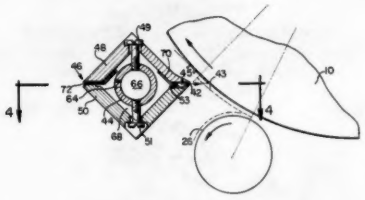
b. a feed roller rotatably mounted within said container, and arranged relative to said arcuate top wall recessed portion, said elongate slot and the arcuate path traversed by said surface whereby the center axes of each are aligned in a vertical plane taken through the center of said slot, said feed roller being sized and positioned so as to contact the liquid toner in the container and a portion of its circumferential surface extending into said slot to direct liquid toner from within the container to said toning gap yet said roller being spaced from said arcuate path of said surface as the belt moves through said gap.

4,259,006

AIR JET MEANS FOR REMOVING LIQUID FROM A CONDUCTIVE SURFACE

Edwin R. Phillips, Rosemont, and Raymond J. Stankiewicz, Philadelphia, both of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Aug. 20, 1979, Ser. No. 67,980
Int. Cl.[3] G03G *15/10*
U.S. Cl. 355—10 **2 Claims**



2. In combination with an electrostatic reproduction machine utilizing a liquid developer made up of charged toner particles in a liquid carrier, a reservoir for containing said liquid developer, a drum providing a photoconductive surface adapted to receive a latent electrostatic image, and means for rotating said drum so that said photoconductive surface is passed through the liquid developer in said reservoir to develop the image on said drum,

means for removing excess liquid carrier from said photoconductive surface after it has passed through said liquid developer comprising:

roller means disposed in close proximity to said drum to meter the amount of liquid carrier remaining on said photoconductive surface after it has passed through said liquid developer,

an air knife for projecting a jet of pressurized air at said photoconductive surface at about a 45 degree angle with respect to said surface after it has passed said roller means to cause said liquid carrier to be directed towards said roller means,

said air knife includes a relatively narrow slit opening of 0.007+0.001 inches extending longitudinally proximate said photoconductive surface for projecting a relatively uniform jet of pressurized air thereto,

said roller means being disposed between said air knife and said reservoir to receive the liquid carrier resulting from said jet of pressurized air,

said roller further being rotatable in an opposite direction to said drum so that the liquid carrier removed from the photoconductive surface by said jet of pressurized air is received by said roller and is carried away from the surface of said drum and returned downwardly to said reservoir.

4,259,007

PHOTOGRAPHIC APPARATUS

Toshio Arai, Kawasaki; Shunzo Inoue, Yokohama; Yasuo Kuroda, Sagamihara; Michio Kasuya, Fuchu; Motofumi Konishi, Yokohama, and Mitsuo Nakamura, Chofu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

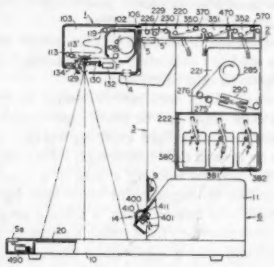
Filed Sep. 7, 1979, Ser. No. 73,484
Claims priority, application Japan, Sep. 14, 1978, 53-113040; Sep. 14, 1978, 53-113041
Int. Cl.[3] G03B *27/32, 27/52*
U.S. Cl. 355—27 **12 Claims**

1. A photographic apparatus provided with a camera for

photographing image originals on a photographic film and processing means for developing the exposed film, said camera comprising:

(a) lens means for projecting images on said originals onto said film;

(b) a storage chamber for storing exposed film therein, said storage chamber defining a space of a size sufficient to accumulate therein a certain amount of said exposed film in its unwound state, and for accommodating therein a take-up reel;



(c) holding means for detachably holding said take-up reel in said storage chamber;

(d) driving means for rotating said take-up reel when held by said holding means so as to take up said exposed film on said take-up reel; and

(e) a film conveying path formed between said storage chamber and said processing means for forwarding the film stored in the space of said storage chamber in its unwound state to said processing means.

4,259,008

ELECTROSTATIC COPYING APPARATUS

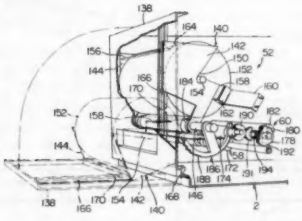
Ryutaro Yamagata, Nishinomiya; Sohei Matsuo, Osaka; Shigeo Koyama, Toyonaka; Nobuhiko Kozuka, Suita; Yasusuke Tohi, Sakai, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company, Ltd., Osaka, Japan

Filed Apr. 10, 1979, Ser. No. 28,791

Claims priority, application Japan, Apr. 14, 1978, 53-43254; Jan. 16, 1979, 54-2161

Int. Cl.[3] **G03G** *15/00;* **G03B** *29/00, 27/50*

U.S. Cl. 355—29 **33 Claims**



25. An electrostatic copying apparatus comprising a housing, means for supporting an original to be copied, said means being mounted on said housing and having a transparent plate for supporting the original thereon and a holding member for covering the original on the transparent plate, means for forming a copied image disposed within said housing and having an optical system for projecting the image of the original on the transparent plate, and a system for transferring a copying paper synchronously with the scanning of the image of the original which is effected by the relative movement of the original-support means and the optical system, said transfer system including a paper roll feed means for unwinding a roll of copying paper and a cutter means for cutting lengths of paper from the roll of copying paper, said paper roll feed means including a support frame for rotatably supporting the core of a roll of copying paper, said frame being mounted for pivotal movement between a paper roll loading position and a paper roll unwinding position, a rotatable feed roller unit for feeding paper unwound from the paper roll, and an initial feed means for rotating the copying paper feed roller unit by a predetermined amount in the paper feeding direction at the time of loading the roll of copying paper, said predetermined amount being equal to the distance from the nip position of the feed roller unit to the cutting position of said cutter means.

4,259,009

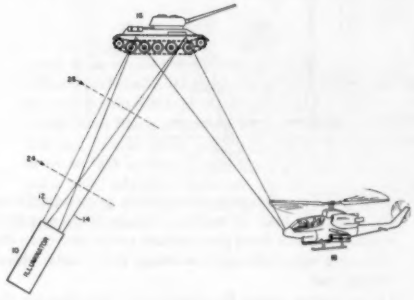
FAR FIELD TARGET DESIGNATORS

James L. Jernigan, Inyokern, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 30, 1979, Ser. No. 61,737

Int. Cl.[3] **G01C** *3/00, 5/00;* **G02B** *27/00;* **F41G** *7/26*

U.S. Cl. 356—1 **13 Claims**



1. A target designator system with separate illumination and receiver subsystems comprising:

a laser for producing a coherent beam of light;

a beam splitting device placed in said light beam for diffracting half of said light beam through a predetermined angle so that it travels along a different path from that traveled by the undiffracted half of said light beam, whereby said diffracted beam is shifted in frequency by said beam splitting device;

a pair of mirrors, one placed in each path of said divided light beam for reflecting said divided beam onto two approximately parallel paths;

optical focusing means in the paths of said approximately parallel beams for controlling the expansion of said beams, whereby said beams are diverged until they overlap on a target at a predetermined range producing interference fringes; and

means for receiving at a predetermined location the interference fringes reflected from said target.

4,259,010

APPARATUS FOR MEASURING AND EVALUATING A PICTURE PLATE

Bernhard Hauri, Staffelbach, Switzerland, assignor to Kern & Co. AG, Aarau, Switzerland

Filed Dec. 26, 1978, Ser. No. 972,861

Claims priority, application Switzerland, Dec. 23, 1977, 015942/77

Int. Cl.[3] **G01C** *11/12*

U.S. Cl. 356—2 **14 Claims**

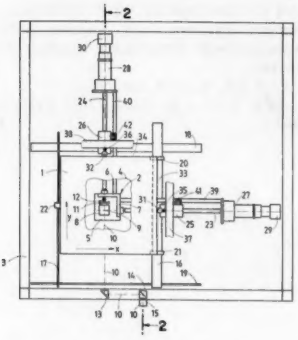
1. A restitution instrument for measuring and evaluating a picture plate comprising:

(a) a mounting stage for mounting the picture plate, the mounting stage having two stage edges forming substantially a 90° angle;

(b) a carriage means attached to the mounting stage for guiding the mounting stage substantially free of rotation in directions substantially parallel to the stage edges;

(c) a drive means attached to the mounting stage for driving the stage in the directions along the carriage means, the drive means comprising:

(i) a drive unit slidably mounted to each of the stage edges, each drive unit having a drive member driven by a drive motor, the member being mounted at substantially 90° to the stage edge, the member driving the mounting



stage in a line of motion substantially perpendicular to the edge, the lines of motion of each of the members intersecting at a fixed point whose projection onto the mounting stage falls upon an image point under observation; and

(ii) a measuring means for determining the distance the mounting stage is driven in each direction;

(d) a stationary support member in close proximity to the image point, the drive members braced thereagainst;

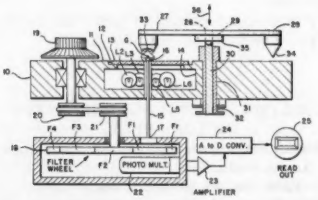
(e) an optical observation system for viewing the image point, the system having a measuring mark and a beam splitter prism supported by the stationary support member.

4,259,011

OPTICAL GEM ANALYZER

John C. Crumm, 814 Alma Real Dr., Pacific Palisades, Calif. 90272, and George D. Carlsen, 12536 Truro, Hawthorne, Calif. 90250

Filed Nov. 5, 1979, Ser. No. 91,473
Int. Cl.³ G01J *3/50*
U.S. Cl. 356—30 **4 Claims**



1. An optical gem analyzer including, in combination:

(a) a housing having on its top surface a cut-out area;

(b) a translucent member in said cut-out area defining a light emitting surface;

(c) a light box in said housing below said translucent member having light source means passing light to said translucent member;

(d) a fiber optic bundle extending downwardly from a center point on said light emitting surface to a remote position outside said light box;

(e) a light filter means having a reference filter and at least one other light filter in said housing;

(f) means for selectively positioning any one of said filters in a position to intercept light passing from the end of said fiber optic bundle at said remote location;

(g) a photo multiplier detector positioned to receive light passing through said selected filter;

(h) read-out means connected to said photo multiplier to provide a read-out indicative of the intensity of light after passing through said filter; and

(i) a three-stage turret structure mounted on said housing such that each stage can be positioned directly over said center point on said light emitting surface and moved axially in an up and down direction, a first stage having a concave surface for holding a gem in a consistent face-down position in engagement with said light emitting surface over said center point, a second stage having a pointed convex surface for holding a different type of gem in a mounting, and a third stage comprising a convex calibrating mirror for directing light from said light emitting surface down through said center opening to pass into said fiber optic bundle for calibrating purposes,

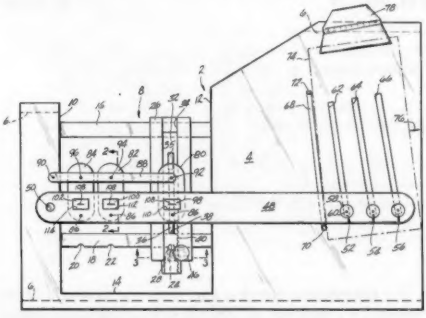
whereby said gem when held in said first stage will receive light from said light emitting surface on all of its facets surrounding said center point, said light being internally reflected and refracted and at least a portion thereof passing through said center point from inside said gem to be transmitted by said fiber optic bundle to said remote position and pass through a selected filter so that a comparison of said read-out when said light passes through said reference filter can be made with the read-out when said light passes through said at least one other filter to thereby provide an indication of the gem quality.

4,259,012

BLOOD COUNT READER

Stephen C. Wardlaw, 128 Sunset Hill Dr., Branford, Conn. 06405

Filed Nov. 19, 1979, Ser. No. 95,159
Int. Cl.³ G01N *33/48*; G01D *9/00*; B43L *13/12*
U.S. Cl. 356—39 **5 Claims**



1. An improved instrument for use in measuring blood cell counts in a centrifuged blood sample, said instrument comprising:

(a) a stage for supporting a tube containing a centrifuged sample of whole blood, the cell counts of which are to be measured, said stage being movable in the direction of elongation of the blood-containing tube when the latter is disposed on the stage;

(b) at least two optically magnifying lenses for viewing the

tube when the latter is disposed on the stage, each lens having associated therewith a reference line for alignment with cell type interfaces in the centrifuged blood sample;

(c) means for moving said stage between at least two positions, each of which positions enables the tube, when disposed on the stage, to be viewed by a different one of said lenses;

(d) a movable member operably connected to each of said lenses for moving said lenses in the direction of elongation of the tube when the tube is disposed on the stage;

(e) at least two marking means operably connected to said movable member for movement therewith, each of said marking means being associated with a respective lens and reference line;

(f) mounting means for temporarily holding a data card adjacent to said marking means whereby the card can be marked by said marking means when an associated reference line is aligned with a particular cell interface in the centrifuged blood sample; and

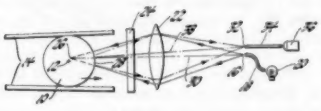
(g) means for controlling the extent of movement of each of said marking means so that one of said marking means will move a greater distance than the other when its associated reference line is moved the same distance along the tube as the other reference line, whereby compensation is had for different cell sizes and packing characteristics.

4,259,013

OPTICAL METHOD FOR INSPECTING SPHERICAL PARTS

Frederick R. Faxvog, and Robert W. Lewis, both of Rochester, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 30, 1979, Ser. No. 71,188
Int. Cl.³ G01N *21/89*
U.S. Cl. 356—237 **4 Claims**



1. The method of optically inspecting the surface of a spherical part comprising the steps of

rotating the spherical part about its center,

directing light in a focused form from light forming optics onto the surface of the part in a narrow real line image such that the light is focused toward a virtual line image slightly spaced from the center of the part,

focusing by the said optics light reflected from the said real line image to a detection region, and

measuring the focused reflected light comprising chiefly that reflected from a perfect part surface at a specific locus in the said region such that most of the light scattered or absorbed by a surface defect does not reach the locus thus reducing the measured light when a defect is illuminated by the line image.

4,259,014

FIBER OPTIC POLYCHROMATOR

Yair Talmi, Plainsboro, N.J., assignor to Princeton Applied Research Corporation, Princeton, N.J.

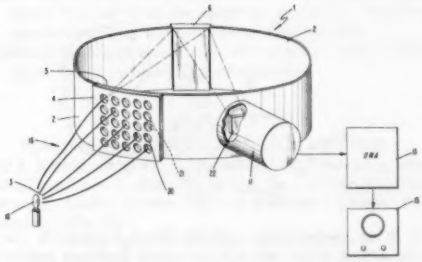
Filed Apr. 3, 1979, Ser. No. 26,605
Int. Cl.³ G01J *3/20*
U.S. Cl. 356—328 **35 Claims**

1. An optical fiber polychromator comprising:

an optical arrangement including entrance means for admitting light radiation into an entrance focal plane, display means located at a predetermined exit focal plane, and spectrum means for separating said radiation into spectral components determined by the position at which said radiation is admitted into said entrance plane and for focusing said spectral components on said display means;

a plurality of optical fibers, each of said optical fibers having one end positioned near a light source and the other end positioned adjacent to said entrance focal plane for guiding radiation to said entrance plane; and

means included in said entrance means for retaining the end of each of said optical fibers nearest said entrance plane in any one of a plurality of locations in a predetermined



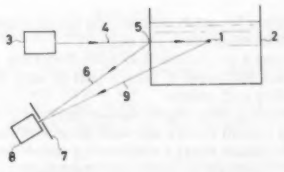
array, each of said locations in said array being defined by column and row coordinates in a fixed rectilinear matrix located in said entrance focal plane, said column and row coordinates being separated by predetermined distances and said optical fibers being retained at locations of said array so that no two of said fibers are aligned within the same row, whereby radiation admitted by said fibers is displayed at said exit plane in parallel non-overlapping spectral bands.

4,259,015

METHOD AND DEVICE FOR MEASURING FINE PARTICLES

Akiyoshi Wada, 11-4, Akasaka 8-chome, Minato-ku, Tokyo, Japan

Filed Mar. 28, 1979, Ser. No. 24,863
Int. Cl.³ G01N *15/02*
U.S. Cl. 356—336 **2 Claims**



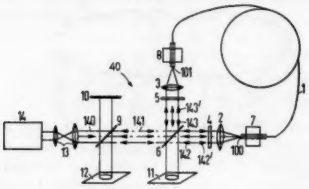
1. A method for determining the size distribution of fine particles suspended in a fluid comprising:

causing relative movement between said fine particles and a cell containing said fluid by applying an acceleration force to said cell by pulse or vibration; and then, determining a physical quantity which is proportional to the sedimentation rate of said fine particles through the measurement of the position and phase of said fine particles relative to said cell.

4,259,016
INTERFEROMETER WITH A SINGLE-MODE WAVEGUIDE COIL

Gerhard Schiffner, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 11, 1979, Ser. No. 2,615
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1978, 2804103
Int. Cl.³ G01B 9/02
U.S. Cl. 356—350 **19 Claims**

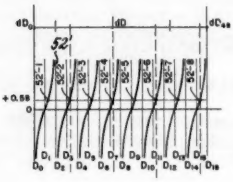


1. In an interferometer with an optical single-mode waveguide wound into a coil, said waveguide having a surface at each end for the acceptance of light into the waveguide and for the display of light in the waveguide, and at least one light receiving surface for receiving light emitted from said end surfaces of the waveguide, the improvements comprising at least one polarizing filter being arranged in the path of light emerging from each end surface of the waveguide prior to the light reaching the light receiving surface.

4,259,017
METHODS FOR USE IN DEFINITION OF OBJECT SURFACES

Joseph A. Ross, Fort Salonga, and Howard K. Stern, Greenlawn, both of N.Y., assignors to Dynell Electronics Corporation, Melville, N.Y.

Filed Oct. 3, 1977, Ser. No. 838,835
Int. Cl.³ G01B 11/00, 11/24
U.S. Cl. 356—375 **13 Claims**



1. A method for use in defining the spatial location of object surface points comprising the steps of:

(a) defining a projection field extending from a given location and including at least a part of said object surface including said points;

(b) irradiating said object surface part by projecting patterned radiant energy into said projection field, such projected radiant energy conforming successively to a first pattern having a continuous characteristic variation along an axis transverse to said projection field, a second pattern having such continuous characteristic variation inverse to said first pattern along said axis, a third pattern having a continuous characteristic variation along said axis diverse from such continuous characteristic variation of said first pattern, and a fourth pattern having such continuous characteristic variation inverse to said third pattern along said axis;

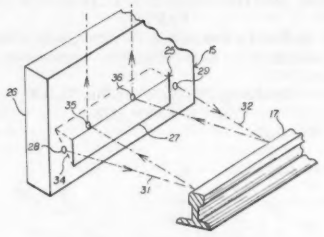
(c) making a separate record of said object surface part for such successive irradiation thereof; and

(d) obtaining from intensity representations in said records and indicative of object surface points a ratio characteristic continuously indicative of object point location.

4,259,018
OPTICAL TRACK GAGE MEASURING DEVICE

Paul J. Poirier, South Hamilton, Mass., assignor to The United States of America as represented by the Secretary of the Department of Transportation, Washington, D.C.

Filed Nov. 20, 1978, Ser. No. 962,239
Int. Cl.³ G01B 11/14; G01C 3/24
U.S. Cl. 356—375 **5 Claims**



1. Rail gage apparatus comprising in combination with a wheeled vehicle for traveling along two rails having opaque rail heads:

a pair of collimated light sources mounted a fixed distance apart on said vehicle and each disposed to direct a light beam onto a different one of the rails, each of said beams impinging at an incident angle on the inner surface of the rail head at a point a given distance from the top surface thereof;

a light receiver means associated with each of said light sources and oriented to receive an image of said light source after reflection of said light beam from the rail head;

a detector means for producing outputs dependent on the distances between each of said reflected image centers and their respective references;

wherein said light sources and said light receiver means form probe assemblies mounted substantially horizontally adjacent to the rail heads, said detector means are mounted above said probe assemblies, and said light receiver means comprise optical director means for directing said images to said detector means; and

wherein each of said probe assemblies comprises a second collimated light source disposed to direct a second light beam onto a different one of the rails, each of said second beams impinging at an incident angle on the inner surface of the rail head at a point said given distance from the top surface thereof, and each of said light receiver means receives an image of both said light source and said second light source associated therewith.

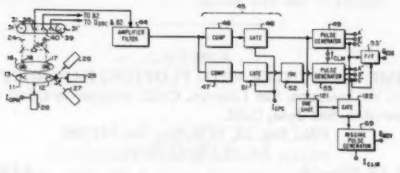
4,259,019
APPARATUS FOR THE AUTOMATIC ALIGNMENT OF TWO SUPERIMPOSED OBJECTS, FOR EXAMPLE A SEMICONDUCTOR WAFER AND A TRANSPARENT MASK

Karl-Heinz Johannsmeier, Mountain View; Paul E. Stoft, Menlo Park, and Tor G. Larsen, Cupertino, all of Calif., assignors to Kasper Instruments, Inc., Sunnyvale, Calif.

Division of Ser. No. 650,976, Jan. 21, 1976, Pat. No. 4,070,117, which is a division of Ser. No. 305,861, Jun. 12, 1972, Pat. No. 3,955,072, which is a continuation of Ser. No. 126,597, Mar. 22, 1971, abandoned. This application Oct. 4, 1977, Ser. No. 839,324

Int. Cl.³ G06F *15/46*; H05K *13/00*

U.S. Cl. 356—400 **9 Claims**



1. A system for aligning first and second relatively movable objects, where the first object has a pattern thereon, the second object has a corresponding pattern thereon, and the pattern on the first object is disposed in a preselected position relative to the corresponding pattern on the second object when the first and second objects are aligned; said system comprising first means operable for repetitively determining the angular and the coordinate displacement between the alignment pattern on the first object and the preselected position relative to the corresponding pattern on the second object; second means operable following each such determination by the first means for moving the first object relative to the second object through an angle and a distance based on that determination to incrementally bring the pattern on the first object into the preselected position relative to the corresponding pattern on the second object; third means for determining whether the first and second objects are aligned within a preselected tolerance and for stopping the first and second means when the pattern on the first object has been moved within the preselected tolerance of the preselected position relative to the corresponding pattern on the second object; and fourth means for enabling an operator to adjust the preselected tolerance.

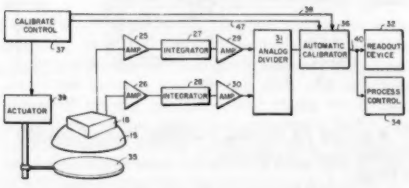
4,259,020
AUTOMATIC CALIBRATION CONTROL FOR COLOR GRADING APPARATUS

Raymond E. Babb, Fremont, Calif., assignor to Genevieve I. Hanscom, a part interest; Genevieve Hanscom; Robert M. Magnuson and Lois J. Thomson, all of San Jose, Calif., Trustees of the Estate of Roy M. Magnuson, part interest to each

Filed Oct. 30, 1978, Ser. No. 955,980

Int. Cl.³ G01J *3/50*

U.S. Cl. 356—402 **8 Claims**



1. Apparatus for continuously measuring the color of a product, comprising in combination:

a color detecting head for detecting light reflecting from the product and for generating a color signal responsive to the color of said product;

means to store said color signal for supplying a continuous color signal from the apparatus;

a target of known color;

means to detect the color of said target by said head and to generate a first color signal responsive thereto;

means to generate a predetermined signal corresponding to the color of said target;

means to compare the predetermined signal and the color signal responsive to the target to generate a modifier signal responsive to the difference therebetween; and

means to modify all subsequent color signals by said modifier signal thereby to calibrate said apparatus.

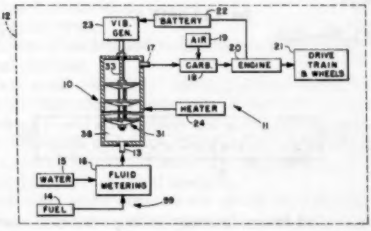
4,259,021
FLUID MIXING APPARATUS AND METHOD

Paul R. Goudy, Jr., 8920 W. Hampton Ave., Milwaukee, Wis. 53225, assignor to Paul R. Goudy, Jr., Milwaukee, Wis.; Bruce J. Landis, Sunrise, Fla. and Kenneth J. Landis, Willoughby Hills, Ohio

Filed Apr. 19, 1978, Ser. No. 897,670

Int. Cl.³ B01F *11/02, 15/06, 5/06*; F02M *29/00*

U.S. Cl. 366—118 **77 Claims**



12. A mixing apparatus, comprising a housing, at least one mixing means in said housing for effecting a mixing of a fluid-like material flowing therethrough, said mixing means including dividing means for dividing such fluid-like material into plural streams, and direction changing means for at least twice changing the flow direction of such streams, chamber means in said housing for permitting generally turbulent mixing of such streams after exiting of the same from said mixing means, and vibrator means to apply vibrational energy to fluid flowing through said housing.

4,259,022
FUEL PRODUCING SYSTEM FOR SOLID/LIQUID MIXTURES

Roy E. Folland, Clarenceville, Canada, assignor to Folland Corporation, Coral Gables, Fla.

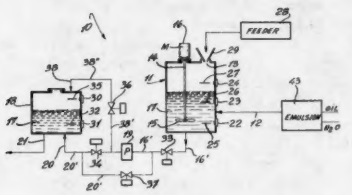
Filed Dec. 10, 1979, Ser. No. 101,858

Int. Cl.³ B01F *5/10, 7/22, 15/04*

U.S. Cl. 366—152 **5 Claims**

1. A fuel producing system for a solid/liquid mixture, said system comprising a mixing reservoir, said mixing reservoir having a first inlet for receiving a combustible liquid fuel, a second inlet for receiving a solid fuel pulverized to a mixable state with said liquid fuel means for mixing said liquid and pulverized solid fuels in said reservoir, quantitative control means associated with said mixing reservoir to measure predetermined amounts of said liquid and solid fuels delivered therein, a holding reservoir for receiving a solid/liquid fuel mixture from an output conduit of said mixing reservoir, pump means in said output conduit, first control means to shut off the flow of said fuel mixture to said holding reservoir to permit the

mixing of further fuel mixture in said mixing reservoir, and second control means to initiate the flow of said fuel mixture to



said holding tank when the mixture fluid therein is extracted to a predetermined low level.

4,259,023

APPARATUS AND PROCESS FOR MIXING OR REACTING INCOMPLETELY MISCIBLE PHASES

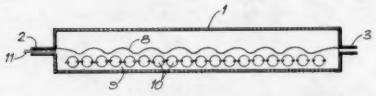
Peter Flesher, Bingley, and Ian M. Johnson, Brighouse, both of England, assignors to Allied Colloids Limited, Bradford, England

Filed May 21, 1979, Ser. No. 41,139

Claims priority, application United Kingdom, May 23, 1978, 21296/78

Int. Cl.³ B01F *9/02*

U.S. Cl. 366—220 **6 Claims**



1. A method for continuously mixing a liquid mixture of a first liquid with an incompletely miscible second material and which comprises flowing the mixture continuously and without turbulence through a substantially horizontal tube that is incompletely filled with the liquid mixture while rotating the tube about its longitudinal axis at a rate such that pairs of counter rotating vortices, each with its axis substantially horizontal but transverse to the longitudinal axis of the tube, are formed in the liquid mixture.

4,259,024

DEVICE FOR MIXING FLOWABLE MATERIALS

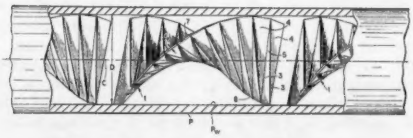
Heinrich Clasen, Gerstenbergstr. 34, 2000 Hamburg, Fed. Rep. of Germany, and Sven Clasen, Lohof, Fed. Rep. of Germany, assignors to Heinrich Clasen, Hamburg, Fed. Rep. of Germany

Filed May 7, 1979, Ser. No. 36,757

Claims priority, application Fed. Rep. of Germany, May 9, 1978, 2820186

Int. Cl.³ B01F *15/00*

U.S. Cl. 366—339 **14 Claims**



1. In a device for mixing a flowable material wherein the flowable material is passed through a pipe section provided with at least one mixing element subdividing the flow of the material into at least two streams and guiding the streams around a common axis, each mixing element being formed from a flat sheet metal blank with successive substantially flat surface regions of triangular outline, the improvement wherein

the mixing element is curved helically in a uniform manner about the axis of the pipe section and comprises only two groups of flat surface regions of oblong triangular outline, the regions being oriented alternately in opposite directions transverse to said axis and being folded angularly relative to one another along common long sides of the respective triangles, the smallest triangle side of the flat surface regions of one group lying along one helical longitudinal edge of the mixing element and the triangle apices of the other group lying along said longitudinal edge between said smallest triangle sides of adjacent surface regions of said one group.

4,259,025

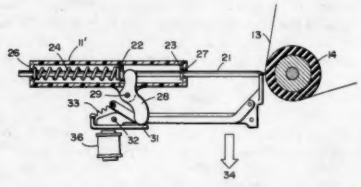
IMPACT PRINTER WITH PLOTTING CAPABILITY

John W. Jamieson, San Leandro, Calif., assignor to Qume Corporation, San Jose, Calif.

Filed Sep. 29, 1978, Ser. No. 947,008

Int. Cl.³ B41J *29/26*

U.S. Cl. 400—18 **4 Claims**



1. A printer which includes a ribbon lift mechanism and a pen linked to said mechanism for contacting a medium in response to the operation of said ribbon lift mechanism.

4,259,026

DOT PRINTER HAVING CONCENTRIC DRIVING CAMS

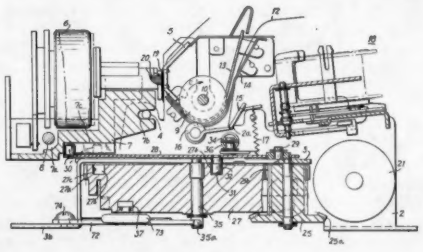
Seiji Hanaoka; Masahiko Mori, and Takao Kobayashi, all of Shiojiri, Japan, assignors to Kabushiki Kaisha Suwa Seikosha and Shinshu Seiki Kabushiki Kaisha, both of Tokyo, Japan

Filed Jan. 25, 1979, Ser. No. 6,932

Claims priority, application Japan, Jan. 25, 1978, 53/6861

Int. Cl.³ B41J *3/12, 35/10, 19/30, 19/84*

U.S. Cl. 400—124 **29 Claims**



1. A printer for printing sequential lines of characters on recording paper, comprising:

a frame;

a printing head mounted to said frame for reciprocating motion relative to said recording paper;

first driving means for reciprocating said printing head, said first driving means including a first cam and follower

whereby the velocity and position of said printing head is regulated;

an elongated ink ribbon, said ink ribbon being interposed between said printing head and said recording paper;

means for moving said ink ribbon transversely to the reciprocating motion of said printing head, said means for moving said ink ribbon transversely includes a second cam and follower;

means for incrementally feeding said recording paper to said printing head for printing, said means for feeding including a third cam and follower, said first and second and third cams turning in unison about a common axis,

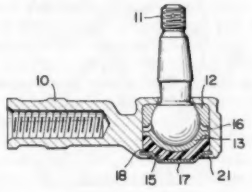
whereby said paper feeding and ink ribbon moving are synchronized to a particular position of said reciprocating printing head.

4,259,027

CONSTANT TORQUE BALL JOINT

Toshio Hata, 11-14-403, 1-chome, Denenchofu, Ohta-ku, Tokyo, Japan

Filed Sep. 10, 1975, Ser. No. 611,943
Claims priority, application Japan, Sep. 27, 1974, 49/110620
The portion of the term of this patent subsequent to Mar. 16, 1993, has been disclaimed.
Int. Cl.³ F16C *11/06*
U.S. Cl. 403—132 **1 Claim**



1. A constant torque ball joint, especially applicable as an automotive steering ball joint, consisting of:

(a) a socket joint rod means having a bearing shell at one end, said shell including a socket cavity and first and second openings and having shoulder means adjacent said second opening,

(b) a ball stud member having a ball head portion positioned in a spaced relation in said socket cavity and having a shank portion connected to said ball head portion and extending through said first opening;

(c) upper and lower segmental spherical bearing cup pieces being made of a self-lubricating material and mounted to provide a spacing between said bearing cup pieces; said ball head portion being journalled in said bearing cup pieces;

(d) elastic block means having a segmental spherical surface and being made of an elastic material having a longitudinal elastic modulus Eo of 1.5 to 10 kg/mm^2 and being tightly interposed between said bearing shell and said lower segmental bearing cup piece, said elastic block means being mounted in a compressed relationship with its segmental spherical surface against the lower bearing cup piece, said elastic block being compressed upon assembly at an elastic compression rate of 20% or less; and

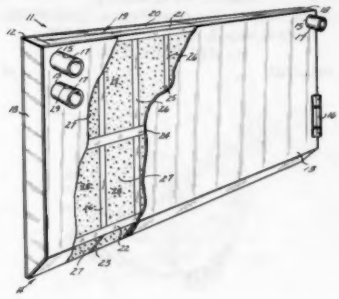
(e) a cover disc closing said second opening and being tightly secured against said shoulder means of said bearing shell.

4,259,028

WATER AND DEBRIS IMPERMEABLE TRENCH BOX PANEL

John B. Cook, East Lansing, Mich., assignor to Efficiency Production, Inc., Okemos, Mich.

Filed Apr. 17, 1978, Ser. No. 896,745
Int. Cl.³ E21D *5/00*
U.S. Cl. 405—282 **8 Claims**



1. A trench box having water impermeable panels and each of said panels comprising:

a perimeter frame;

a plurality of vertical and horizontal internal support structural elements;

a pair of metal skin surfaces having plural connectors transversely extending from one side of said skin surfaces and secured to said skin surfaces and to selected of said structural elements, said skin surfaces registering on said frame and closing against and secured to said vertical and horizontal support structural elements;

a lightweight water impermeable closed cell foam filler in the cavities between said frame, said vertical and horizontal elements and said skins; and

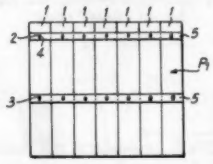
means separating pairs of said panels in spaced apart relation, said means attached to said connectors at the ends thereof.

4,259,029

ARTICULATED PANEL STRUCTURE FOR LINING EXCAVATION TRENCHES

Jean-Marie Koehl, 3, rue Varengue, 92340 Bourg-la-Reine, France

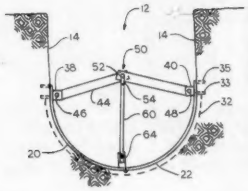
Filed Jun. 9, 1978, Ser. No. 914,002
Claims priority, application France, Jun. 9, 1977, 77 17753
Int. Cl.³ E21D *5/12*
U.S. Cl. 405—282 **8 Claims**



1. An articulated deformable panel structure for lining an excavation, said panel structure comprising a plurality of individual adjoining panel elements, tie means for interconnecting said adjoining panel elements in mutually slidable edge engagement, and interconnecting means between each of said individual adjoining panel elements and said tie means, said interconnecting means being shaped and dimensioned for allowing a limited predetermined longitudinal displacement of an individ-

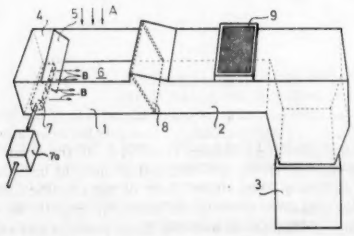
ual panel element relative to an adjacent adjoining individual panel element and maintaining slidable edge engagement therebetween for causing said articulated deformable panel structure to be inserted as a single structure into the ground and extracted from the ground by deformation of said panel within a single plane.

4,259,030
GROUND ANCHOR
Raul Montoya, 4481 N. Emerson, Fresno, Calif. 93705
Filed May 3, 1979, Ser. No. 35,780
Int. Cl.³ E02D *17/00*
U.S. Cl. 405—303 **16 Claims**



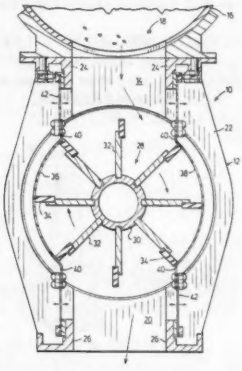
1. An anchor for use in an open trench, said anchor comprising:
   a first elongated, concave sleeve section, said first sleeve section having a longitudinal axis and an inner side and an outer side;
   a second elongated, concave sleeve section, said second sleeve section having a longitudinal axis and an inner side and an outer side;
   means disposed along the longitudinal axis of said first sleeve section and said second sleeve section for pivotally mounting said first sleeve section to said second sleeve section;
   a plurality of earth engaging blades mounted on the outer side of said first sleeve section and said second sleeve section; and
   urging means mounted in the inner side of said sleeve section for urging said sleeve sections away from each other, causing said blades to extend outwardly and engage the sides of said open trench, upon application of a pulling force to said anchor in a direction generally aligned with said longitudinal axes of said sleeves.

4,259,031
METHOD AND APPARATUS FOR FEEDING A PROCESSING MACHINE
Sven-Inge Axelson, Bredaryd, Sweden, assignor to Maskin AB Rapid, Sweden
Filed Jun. 20, 1979, Ser. No. 50,203
Claims priority, application Sweden, Jun. 22, 1978, 7807142
Int. Cl.³ B65G *53/66*
U.S. Cl. 406—21 **7 Claims**



1. A method of supplying a granulator mill with pieces of material such as scraps of plastic and the like which is discharged from another machine comprising the steps of feeding said material into a duct having a lower substantially imperforate wall, directing a driving gas current parallel and in proximity to the lower wall of said duct and at a point in advance of the entrance of said material to propel said material along the lower wall of said duct, blocking discharge of material from said duct in a direction opposite to the flow of said gas, restricting recirculation of gas in a direction opposite to said gas current during transport of said material, discharging at least a portion of said gas from said duct in one direction following said restriction and discharging said material from said duct in another direction.

4,259,032
AIR LOCK
Albert Kuhner, Schomberg, Canada, assignor to Rothmans of Pall Mall Canada Limited, Toronto, Canada
Filed Jan. 15, 1979, Ser. No. 3,290
Claims priority, application United Kingdom, Jan. 18, 1978, 2103/78
Int. Cl.³ B65G *53/46*
U.S. Cl. 406—62 **3 Claims**



1. An air lock for the discharge of solid particulate material from a vacuum-conveyed stream thereof while preventing the ingress of air to the stream, comprising:
   a hollow enclosed housing,
   upper inlet means to said housing for receipt of said particulate material from said vacuum-conveyed stream, the lateral extremities of said inlet means being defined by first enlongate mounting means,
   lower outlet means from said housing for discharge of said particulate material therefrom, the lateral extremities of said outlet means being defined by second mounting means,
   rotor means mounted in said housing in fluid flow relationship with both said inlet means and said outlet means for transfer of said particulate material therebetween,
   said rotor means having a rotatable hub means and a plurality of radially-projecting rigid blade means mounted to said hub means comprising at least four angularly spaced blade means, the axis of rotation of said hub means extending generally parallel to said lateral extremities of said inlet means and said outlet means,
   arcuate wall means mounted on opposite lateral sides of said rotor means and having a center of curvature which is substantially the axis of rotation of said rotor means,
   said arcuate wall means being constructed of semirigid or rigid material and having curvilinear extremities,
   said arcuate wall means being flexibly mounted within said housing for engagement with the radial extremities of said blade means exposed to said vacuum,

said flexible mounting for each said arcuate wall means being effected by a first flexible material strip joined to one of said first elongate mounting means and joined to the adjacent curvilinear extremity of said arcuate wall means and by a second flexible material strip joined to one of said second elongate mounting means and joined to the adjacent curvilinear extremity of said arcuate wall means.

4,259,033

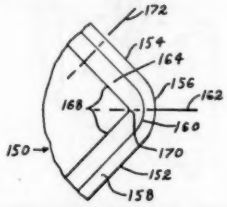
CUTTING INSERT

James F. McCreery, Latrobe, Pa., and Dennis G. Jones, deceased, late of Greensburg, Pa. (by Dolores H. Jones, executrix), assignors to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 528,211, Nov. 29, 1974, which is a continuation-in-part of Ser. No. 339,415, Mar. 8, 1973, abandoned. This application May 10, 1976, Ser. No. 685,111

Int. Cl.³ B26D *1/12*

U.S. Cl. 407—114 **9 Claims**



1. A molded insert for use in removing metal chips from a workpiece and comprising; cutting edge means, a land area, descending wall means and a planar floor means; said insert having a polygonal shape comprising a side edge and a corner when viewed in a direction perpendicular to the plane of said cutting edge means; said cutting edge means having at least two angularly related cutting edges defining a plane substantially parallel to said planar floor means and said cutting edge means extending around at least one corner of said insert; said land area extending inwardly toward the center of said tool from said cutting edge means and at an angle ranging from parallel to 10 degrees of parallel with said planar floor means; and said land area being narrower around the corner of said insert than along the side edges; said descending wall means beginning at the inner edge of said land area and extending inwardly and downwardly at an angle of no less than 15 degrees from a plane parallel with said planar floor means and being inclined to the plane of said cutting edges when viewed in side and making a greater included angle with said plane at said corner of said body than along said side edges thereof; said planar floor means extending inwardly toward the center of said tool from the bottom of said descending wall means; the perpendicular distance from the plane containing said cutting edge means to the planar floor means being in the range of from 0.001 to 0.010 inches and said land area being from 0.005 to 0.030 inches in width, said planar floor being free from a rising chip controlling surface located between the bottom of said descending wall and the center of said planar floor means.

4,259,034

BALE HANDLING APPARATUS

Kent G. McB. Ward, General Delivery, Olds, Alberta, Canada, and Francis L. Smith, 1024 Cannock Pl. SW., Calgary, Alberta, Canada (T2M 1M7)

Filed Jan. 16, 1979, Ser. No. 3,859

Int. Cl.³ A01D *87/12*; B60P *1/16*

U.S. Cl. 414—24.6 **15 Claims**

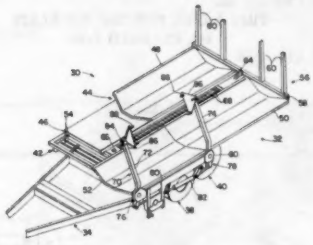
1. A bale handling apparatus comprising:

an elongate main frame having front and rear ends and capable of holding a plurality of longitudinally arranged bales:

means for movably supporting said frame over the ground;

bale engaging means for releasably engaging a bale and for loading and unloading the engaged bale respectively onto and off said frame at one end thereof; and

tilting means having a transverse axis of rotation and for tilting said frame with respect to said supporting means about said transverse axis such that a bale loaded onto said one end of said frame can be slid to the other end of said frame so that a second bale can be loaded onto said frame at said one end thereof;



wherein said frame is also capable of holding a plurality of bales in a transverse arrangement;

said apparatus further comprising a cradle movably mounted on said frame; and

means for moving said cradle transversely with respect to said frame, said bale engaging means also being capable of loading and unloading the engaged bale, respectively, onto and off said cradle.

4,259,035

AGRICULTURAL BALE ACCUMULATOR

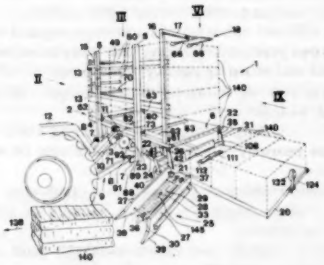
Frans J. G. C. De Coene, and Marc G. Vansteelant, both of Zedelgem, Belgium, assignors to Sperry Corporation, New Holland, Pa.

Filed Sep. 11, 1978, Ser. No. 941,831

Claims priority, application United Kingdom, Sep. 13, 1977, 38193/77

Int. Cl.³ A01D *87/12*; B65G *57/28, 57/32*

U.S. Cl. 414—38 **26 Claims**



1. A bale accumulator comprising:

a load bed for holding bales thereon,

a load table pivotally mounted to one side of the load bed at the lower end thereof and movable between a horizontal bale-receiving position transverse of the load bed and proximate to the ground, and an upright bale discharge-position for depositing a row of bales on the load bed,

drive means for pivoting the load table from the bale-receiving position to the bale-discharge position and vice versa,

first bale-transfer means for moving bales received on the load table in a direction transversely away from the load bed for the formation of a row of bales on the load table,

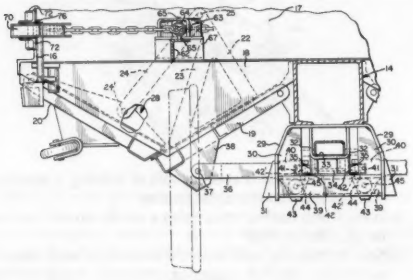
a bale pick-up means located forwardly of the load table adjacent the pivotal mounting thereof and bridging the gap between the ground and the load table for picking up bales from the ground and depositing the bale one after the other on the load table for forming a row of bales thereon.

4,259,036

HOPPER CAR DOOR LOCKING ARRANGEMENT

Roy W. Miller, Highland, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Jul. 13, 1979, Ser. No. 57,529
Int. Cl.³ B61D *7/30*
U.S. Cl. 414—388 **15 Claims**



1. For a railway hopper car having an underframe, and a body supported to said underframe including a plurality of hoppers each having a discharge opening,

a pair of downwardly and outwardly swinging inner and outer doors supported on said underframe for opening and closing each opening,

a door locking arrangement including a bracket structure supported on said underframe,

an arm connected to said inner door,

means slidingly supporting said arm on said bracket for lateral movement,

a longitudinally movable actuating member slidingly supported on said bracket structure,

said actuating member having a cam surface,

cam follower means on said arm engaging said cam surface in one position for locking said doors in a closed position and said actuating member being longitudinally movable to release said follower means and doors from said locked position, the improvement of

a door actuating arrangement comprising a crank arm,

means movably mounting said crank arm on said underframe,

a tension member connected to said crank arm,

said tension member extending laterally of said car and longitudinally,

means connecting said tension member to said longitudinal actuating member;

a ground supported door opening mechanism including a vertical pedestal,

a thrust cam movably supported on said pedestal,

said thrust cam being movable to initially move said crank arm laterally outwardly from said car as said hopper car is passing adjacent to said opening mechanism thereby providing tension in said tension member and moving said crank arm to a bail engageable position,

and a bail member positioned on said pedestal,

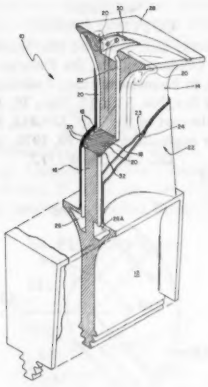
said bail member engaging said crank arm to move the same thereby moving said actuating member to release said doors from locking engagement.

4,259,037

LIQUID COOLED GAS TURBINE BUCKETS

Rodger O. Anderson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 749,719, Dec. 13, 1976, Pat. No. 4,156,582.
This application May 18, 1978, Ser. No. 907,183
Int. Cl.² F01D *5/18*
U.S. Cl. 416—96 R **8 Claims**



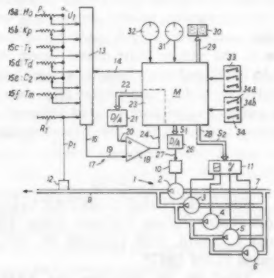
1. A liquid-cooled gas turbine bucket comprising an airfoil, thermally conductive cooling tubes located in grooves formed in the surface of the airfoil to cause cooling thereof upon the passage of cooling liquid through said tubes and being substantially resistant to corrosion by the cooling liquid, a skin covering said airfoil and cooling tubes to protect the exposed surfaces from hot corrosion during operation of the turbine.

4,259,038

METHOD AND REGULATOR FOR CONTROLLING THE DELIVERY OF A PUMP ARRANGEMENT ACCORDING TO DEMAND

Iver Jorgensen, Nordborg; Steen Veigert, Grasten, and Niels E. Andersen, Augustenborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Dec. 15, 1978, Ser. No. 969,834
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1977, 2756916
Int. Cl.³ F04B *49/06*
U.S. Cl. 417—53 **3 Claims**



1. A method for controlling according to demand the delivery of a pumping station having pumps arranged in parallel including one variable speed pump and a plurality of constant speed pumps each having on and off operating modes, said method comprising the steps of sensing and converting an

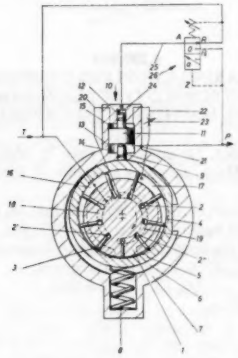
actual signal which corresponds to condition on the output side of said station to a usable signal, comparing said usable signal to a preset signal corresponding to a predetermined pressure to develop a primary control signal, forming first and second derivative control signals from said primary control signal, utilizing said second derivative control signal as a feedback signal to operate one fewer of said constant speed pumps than would be required to equal or exceed said predetermined pressure, and utilizing said first derivative control signal as a feedback signal to modulatingly operate said variable speed pump to adjustably achieve said predetermined pressure.

4,259,039

ADJUSTABLE VOLUME VANE-TYPE PUMP

Dieter Arnold, Düsseldorf, Fed. Rep. of Germany, assignor to Integral Hydraulic & Co., Dusseldorf, Fed. Rep. of Germany

Filed Mar. 20, 1979, Ser. No. 22,183
Int. Cl.³ F04B *49/08*
U.S. Cl. 417—220 **4 Claims**



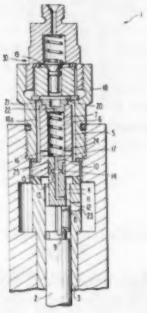
1. An adjustable volume pump comprising a rotor, a plurality of generally radially extending slots in said rotor, vanes mounted in said slots for radially inward and outward movement, a control ring surrounding said rotor and being eccentrically adjustable relative to the rotor, the vanes having outer portions adapted to move along an inner surface of the control ring in operation of the pump, a pressure applying means for urging said ring towards one extreme position, a piston and cylinder system for adjusting the position of the control ring in opposition to said pressure applying means, a pair of lateral plates covering opposite sides of the rotor and control ring respectively, a suction port in at least one of said lateral plates communicating with working chambers of the pump defined between adjacent vanes in a position when said working chambers expand during rotation of the rotor, a pressure port in at least one of said lateral plates communicating with said working chambers in a position when the working chambers contract during rotation of the rotor, a first groove means in at least one of said plates communicating with inner ends of said slots in said position when said working chambers expand, a second groove means in at least one of said plates communicating with the inner ends of said slots in said position when said working chambers contract, said piston and cylinder system defining first and second working spaces on opposite sides of the piston respectively, pressure fluid admitted to said first working space operating to urge the piston in the same direction as the force applied by said pressure applying means and pressure fluid admitted to said second working space operating to urge the piston in a direction opposed to the force applied by said pressure applying means, said pressure port being in fluid flow communication with said first working space and being in fluid flow communication with said second working space through a throttling means and said second groove means being in fluid flow communication with said second working space.

4,259,040

FUEL INJECTION PUMP FOR AIR-COMPRESSING FUEL-INJECTED INTERNAL COMBUSTION ENGINE

Heinz Scheying, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Aug. 23, 1979, Ser. No. 69,055
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1978, 2837297
Int. Cl.³ F02M *45/06*
U.S. Cl. 417—493 **8 Claims**



1. A fuel injection pump for an air-compressing fuel-injected internal combustion engine, the fuel injection pump including at least one pump cylinder means, a pump piston means arranged in each pump cylinder means for regulating a fuel control bore of a pump working chamber means, a control element cooperable with the pump piston means for controlling a flow of fuel in the injection pump, and means provided in the control element for communicating the pump working chamber means with a pump pressure chamber means, characterized in that an intermediate chamber means is arranged between the pump working chamber means and the pump pressure chamber means, a first fuel feed means is arranged in a control cylinder for communicating the pump working chamber means with the pump pressure chamber means, a second fuel feed means including a throttle means is arranged in the injection pump for providing a separate fuel feed to the pump working chamber means, and in that means are provided on the control element for controlling the first and second fuel feed means such that a stream of fuel fed by said first fuel feed means is interrupted by the control element while the stream of fuel is constantly conducted by said second fuel feed means.

4,259,041

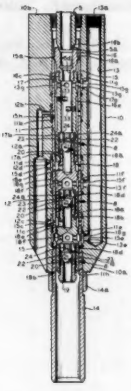
HIGH FLOW STANDING VALVE

F. Barton Brown, La Crescenta, Calif., assignor to Kobe, Inc., Commerce, Calif.

Filed Jun. 21, 1979, Ser. No. 50,720
Int. Cl.³ F04B *21/06, 39/10*
U.S. Cl. 417—559 **10 Claims**

1. A standing valve assembly for an oil well comprising: a cylindrical housing insertable on production tubing insertable within said well, said housing having a primary bore extending vertically therethrough; means for connecting the top end of said primary bore to a pump inlet; an inlet bore extending vertically from the bottom portion of said housing partially up through said housing; an outlet bore extending vertically downwardly from the top portion of said housing partially through said housing, said three bores being disposed in triangular relationship in cross-section and with the top portion of said inlet bore lying adjacent to the lower portion of said outlet

bore; means for connecting the lower end of said primary bore to a source of well fluid; means in said housing connecting the lower end of said inlet bore to said source of well fluid; conduit means in said housing for connecting the upper portion of said outlet bore with said primary bore; means in said primary bore defining a plurality of axially stacked valve chambers intermediate said inlet bore and said outlet bore, each valve chamber



having a generally horizontal inlet connecting with said fluid inlet bore, a generally horizontal outlet connecting with said fluid outlet bore and a valve seat between said inlet and said outlet; a check valve member cooperating with each of said valve seats to prevent reverse fluid flow from said outlet to said inlet, said inlet bore and said outlet bore having a flow area not in excess of the total flow areas of the valve chambers.

4,259,042

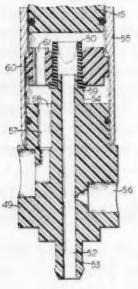
CONFECTIONARY PUMPS

Lawrence E. Heatherly, Colona, Ill., assignor to H & P Pump Company, Port Byron, Ill.

Continuation-in-part of Ser. No. 034,290, Apr. 30, 1979. This application Sep. 10, 1979, Ser. No. 74,000

Int. Cl.³ F04B *21/02*

U.S. Cl. 417—566 **4 Claims**



1. A pump for confections comprising:

a cylinder, a piston within said cylinder, driving means connected to said piston,

a check valve assembly including a valve body, an inlet check valve, and an outlet check valve, one end of said valve body being tightly enclosed within an end of said cylinder,

said valve body having an inlet passageway and an outlet passageway therethrough communicating respectively from outside said cylinder through said valve body and out respective openings in said one end thereof to space within said cylinder,

said inlet check valve being a resilient duck-bill type having a tubular portion at one end thereof and a converging portion with an intermediate slit at the other end thereof, said tubular portion being fit tightly over said opening of said inlet passageway in said one end of said valve body,

a perforated member as a partition within said cylinder extending from said tubular portion of said inlet check valve to said cylinder, said perforated member being spaced from said one end of said valve body to provide a mixing space therebetween, said outlet passageway having an opening through said one end of said valve body into said mixing space,

said outlet check valve being positioned in said outlet passage to permit flow of fluid from said cylinder,

an air passageway communicating from the atmosphere to space within said cylinder, and a check valve within said air passageway to check flow of fluid from said cylinder.

4,259,043

THRUST BEARING/COUPLING COMPONENT FOR ORBITING SCROLL-TYPE MACHINERY AND SCROLL-TYPE MACHINERY INCORPORATING THE SAME

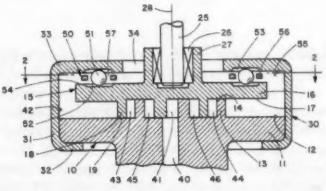
William P. Hidden, Wenham, and John E. McCullough, Carlisle, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 807,414, Jun. 16, 1977, Pat. No. 4,160,629. This application Apr. 23, 1979, Ser. No. 32,178

The portion of the term of this patent subsequent to Jul. 10, 1996, has been disclaimed.

Int. Cl.³ F01C *21/02*

U.S. Cl. 418—55 **45 Claims**



1. A thrust bearing/coupling component capable of simultaneously coupling an orbiting scroll member having a predetermined orbit radius and a stationary scroll member in predetermined angular relationship as said orbiting scroll member is orbited with respect to said stationary scroll member and carrying axial loads imposed on said scroll members, comprising in combination

(a) a plurality of first circular spaced indentations cut in one surface of said orbiting scroll member;

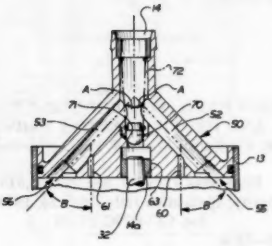
(b) a plurality of second circular spaced indentations of the same cross sectional configuration as said first indentations cut in a surface maintained stationary with respect to said orbiting scroll member and facing said first indentations, the centers of all of said indentations being located on circles having the same radius;

(c) an axial load carrying rolling sphere movable within each facing pair of said indentations, the relative diameters of said spheres and of said indentations being such as to permit said spheres to travel a distance equal to one-half of said orbit radius of said orbiting scroll member in all directions from their central positions thereby to maintain said predetermined angular relationship between said scroll members.

4,259,044
FUEL PUMP ASSEMBLY

Gilbert H. Drutchas, Birmingham, and Phillip B. Spencer, Troy, both of Mich., assignors to TRW Inc., Cleveland, Ohio

Filed May 15, 1979, Ser. No. 39,371
Int. Cl.³ F01C 2/00
U.S. Cl. 418—82 11 Claims

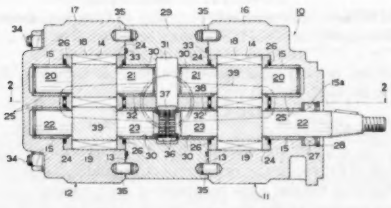


1. A pump for pumping low viscosity fuels which have a tendency to vaporize, said pump comprising means defining an inlet and an outlet, a cam means defining a pumping chamber bore wall defining at least one inlet arc of increasing radius and at least one outlet arc of decreasing radius, a plurality of slippers defining pumping pockets, means for moving said slippers through said inlet arc in which the pumping pockets defined between adjacent slippers are reducing in pressure so as to draw the low viscosity fuel into the pump and through said outlet arc where the pumping pockets are reducing in volume to force the low viscosity fuel through the outlet of the pump, said means for moving said slippers comprising a slotted rotor, each of said slippers being located in a respective slot in the rotor and being biased radially outwardly of the rotor into engagement with the bore wall, an inlet port communicating with said inlet and said pumping pockets as said pumping pockets move through said inlet arc, an outlet port communicating with said pumping pockets and said outlet as said pumping pockets move through said outlet arc, and means for optimizing fuel output rate, inlet vacuum and noises produced by fluid flow in the pump comprising an orifice of predetermined diameter located in said inlet arc and in communication with said inlet and each pumping pocket at a location radially inwardly of said slippers, said orifice diameter being such that pump noise is restricted and said pump has a relatively high output flow rate and a relatively high inlet vacuum.

4,259,045
GEAR PUMP OR MOTOR UNITS WITH SLEEVE COUPLING FOR SHAFTS

Hideo Teruyama, Shobu, Japan, assignor to Kayabakogyokabushikikaisha, Tokyo, Japan

Filed Nov. 24, 1978, Ser. No. 963,329
Int. Cl.³ F03C 2/08; F04C 2/18, 11/00
U.S. Cl. 418—200 4 Claims

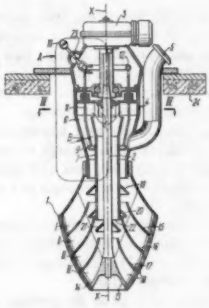


1. In a gear pump or a gear motor, a combination comprising at least two pump or motor unit casings each surrounding a pump or motor chamber for accommodating a pair of intermeshing driven and driving gears and shaft receiving holes or bores axially extended for journalling the outwardly extended shafts of said intermeshing gears; an intermediate one piece casing adapted to be interposed between said two pump or motor unit casings and formed with two axially extended through holes or bores adapted to journal the inwardly extended shafts of said intermeshing gears, one of said two axially extended through holes or bores being adapted to journal both the inwardly extended shafts of the driven or driving gears and the other being adapted to journal both the inwardly extended shafts of the driving or driven gears; a common inlet port in said intermediate casing communicated through low-pressure passages with the pump or motor chambers in said pump or motor unit casings and an assembly chamber or opening communicated with both said two axial through holes or bores intermediate their ends and with said common inlet port, and a sleeve which is smaller than said inlet port and said assembly chamber or opening and which may be inserted through said common inlet port into said assembly chamber or opening so as to interconnect the opposing ends of said inwardly extended shafts of said driving gears.

4,259,046
APPARATUS FOR OBTAINING GRANULES FROM MELTS

Alexei A. Vagin, ulitsa Kljukvina, 6, kv. 18; Oleg J. Kornev, propsekt Dzerzhinskogo, 1, kv. 64, and Alexandr I. Bednyakov, ulitsa Uritskogo, 10a, kv. 35, all of Dzerzhinsk, Gorkovskoi oblasti, U.S.S.R.

Filed Sep. 7, 1979, Ser. No. 73,375
Int. Cl.³ B22F 9/00
U.S. Cl. 425—8 11 Claims



1. An apparatus for use with a granulation tower for obtaining granules from melts, the apparatus being mounted in the tower in such manner that granules leaving the apparatus fall downwardly within the tower, comprising:

a vertical shaft rotatably supported by the tower;

a housing mounted for rotation on the vertical shaft and having perforated side walls;

annular baffles mounted internally of said housing on said perforated walls for dividing said housing into a plurality of vertically-spaced sections;

a melt supply pipe for supplying melt to said housing;

a feeding device positioned between said housing and said melt supply pipe for receiving melt from said supply pipe and for feeding melt to said housing, said feeding device including a chamber having its section varying axially thereof and decreasing in a downward direction;

a distributing tube accommodated within said chamber coaxially therewith and having a bottom end face arranged adjacent to an end face of one of said annular baffles;

ports made in an upper portion of said distributing tube so

that melt above a predetermined level in said chamber flows into said distributing tube;

a gate mounted for vertical adjustment intermediate said chamber and said distributing tube so that the rate of flow of melt past said gate into said housing is adjustable; and

means for rotating said vertical shaft so that said housing is rotated creating centrifugal forces forcing melt fed to said housing outwardly through the perforated side walls of said housing thereby forming granules that are cooled within the granulation tower.

4,259,047

AIR RING FOR THE PRODUCTION OF BLOWN FILM

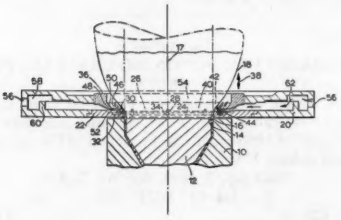
Robert J. Cole, Toronto, Canada

Division of Ser. No. 872,009, Jan. 24, 1978, Pat. No. 4,139,338, which is a continuation-in-part of Ser. No. 747,945, Dec. 6, 1976, abandoned. This application Dec. 22, 1978, Ser. No. 972,327

The portion of the term of this patent subsequent to Feb. 13, 1996, has been disclaimed.

Int. Cl.³ B29F *3/08*

U.S. Cl. 425—72 R **6 Claims**



1. Air ring means for supplying two successive cylindrical streams of cooling air to the exterior surface of a cylindrical tube of extruded and expanded plastic film forming material upon extrusion of the tube from an extruder having a die with spaced, concentric, circular die lips, centered upon an extrusion axis, said air ring means, comprising:

(a) an air ring means body part having an axis and means defining a cylindrical tube passage in said body part centered about said body part axis, said passage constituting means for the passing therethrough of a cylindrical tube of plastic material;

(b) means for mounting said body part upon an extruder so that said body part axis is coincident with the extrusion axis and the cylindrical tube passage is concentric with the die lips of the extruder die;

(c) means defining an annular air passage within said body part;

(d) means for connecting said annular air passage with a source of pressurized air;

(e) a deflector ring member;

(f) means mounting said deflector ring member on said body part concentrically about said body axis;

(g) a control ring member;

(h) means mounting said control ring member on said body part concentrically about said body axis;

(i) said control ring member and an adjacent part of said body defining an annular air discharge zone discharging from said air passage;

(j) said deflector ring member being disposed in said zone and constituting means dividing said zone into two concentric first and second annular air discharge outlet means;

(k) said deflector ring having a first annular air guide surface of progressively increasing diameter in the direction of flow of air through the respective air discharge outlet means confronting a cooperating first annular air guide surface of said control ring, said first annular air guide surface of said control ring being further from said body part axis than said first annular air guide surface of said deflector ring,

(l) said cooperating first air guide surfaces together constituting the said first outlet passage means which is effective to direct air issuing from said air discharge means into a generally conical stream, the axis of which is coincident with the axis of said body part and the radius of which increases in the direction of air flow from the first outlet passage means.

4,259,048

EXTRUSION HEAD FOR PRODUCING SYNTHETIC AND THE LIKE TEXTILE YARNS

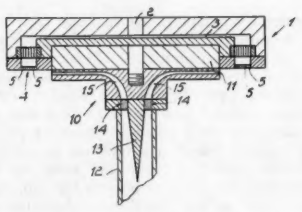
Mario Miani, Via Enrico Fermi, 9, RHO (Province of Milano), Italy

Filed May 21, 1979, Ser. No. 40,813

Claims priority, application Italy, May 24, 1978, 23761 A/78

Int. Cl.³ B29C *25/00*

U.S. Cl. 425—72 S **3 Claims**



1. An extrusion head for producing synthetic and the like textile yarns, comprising a channel for feeding the plastics material stock to be extruded, said channel opening into an extrusion chamber of substantially cylindrical shape having a die of annular configuration located at the peripheral edge of said extrusion chamber and provided with a plurality of calibrated holes evenly distributed thereon with respect to said feeding channel and defining an extrusion direction, a blower positioned inside the area confined by said annular shaped die, wherein according to the improvement said blower has a feeding duct extending parallel to said extrusion direction beneath said extrusion head and a discoidal nozzle on said duct defining at its periphery a single annular slit opening at the inside edge of said annular die and directed perpendicular to said extrusion direction thereby to form in operation a single laminar centrifugal discoidal jet of cooling air impinging perpendicularly against the just extruded yarns close to said die holes.

4,259,049

TABLETTING MACHINE

Rolf Willich, Schwarzenbek, Fed. Rep. of Germany, assignor to Wilhelm Fette GmbH, Schwarzenbek, Fed. Rep. of Germany

Filed Mar. 28, 1980, Ser. No. 134,922

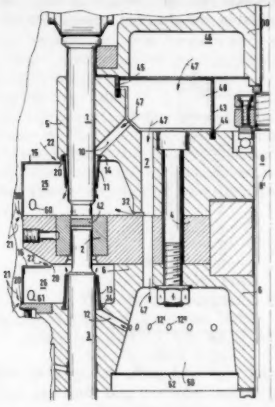
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1979, 2914201

Int. Cl.³ B30B *11/08*

U.S. Cl. 425—73 **13 Claims**

1. In a tabletting machine having reciprocating plungers mounted for reciprocation in respective guides, a combination comprising tubular cuffs surrounding with annular clearance those portions of the plungers which move out of the guides during reciprocation; and means for blowing streams of gase-

ous fluid through said clearances along the respective plungers so as to prevent the deposition of dust on said portions of the



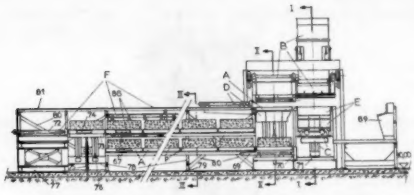
plungers and the entry of the thus deposited dust into the respective guides.

4,259,050

MULTI-PURPOSE INSTALLATION FOR THE MANUFACTURE OF SMALL AND MEDIUM PRODUCTS OF REINFORCED AND UNREINFORCED CONCRETE

Mircea Borcoman, 8, rue des Dardanelles, 75017 Paris, France

Filed Feb. 5, 1979, Ser. No. 21,608
Claims priority, application France, Jun. 6, 1977, 77 17279
Int. Cl.[3] B28B *5/00*
U.S. Cl. 425—88 **11 Claims**



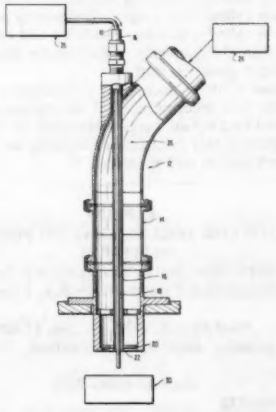
- 1. A multi-purpose manufacturing installation for the manufacture of small and medium products of reinforced and unreinforced concrete, comprising:
  - a hardening circuit including means for routing boards supporting the concrete products therethrough;
  - a tilting frame including at least one mould thereon which is closable by one of said boards;
  - a distributing means for distributing the concrete into the mould;
  - an introducing means for introducing boards one by one onto the tilting frame for closing the mould after it has been filled with concrete;
  - means for tilting the tilting frame through 180° after the mould has been filled with concrete and closed;
  - means operable after the tilting frame has been tilted through 180° for causing the downward movement away from the mould of a board which is provided with products thereon and which have been removed from the mould to a position appropriate for introduction of the board and its products into the hardening circuit, and introducing means for introducing this board into the hardening circuit, which circuit extends over a closed path returning to a position adjacent to the tilting frame;
  - and a discharging means for discharging the hardened products off of their respective boards and away from the manufacturing installation and for cleaning the boards after the hardened products have been removed therefrom;
  - wherein said distributing means and said discharging means are combined so as to form a common unit which comprises a reciprocally movable carriage equipped with a concrete measuring and distribution device for the fresh concrete and a pushing device for pushing the hardened products out of the manufacturing installation and for cleaning and oiling the boards, this pushing device being situated on the carriage beside the measuring device so that during the outward travel of the carriage the pushing device ensures the pushing of the hardened products from a board which is located at the side of and at the same vertical level as the top of the mould, such that as the concrete distributing device is brought into position above the mould, the pushing device pushes the hardened products on the board beside the mould away from the manufacturing installation, and at the end of the outward travel of the carriage the concrete is discharged into the mould and such that, during the return travel of the carriage the board from which the hardened product has just been removed is clean, after which this board is then moved into position to close the mould which has just been filled.

4,259,051

EXTRUSION APPARATUS FOR FOOD MATERIAL

Mounir A. Shatila, Blackfoot, Id., assignor to Ampco Foods Inc., San Francisco, Calif.

Filed May 10, 1979, Ser. No. 37,833
Int. Cl.[3] A21C *11/16*
U.S. Cl. 425—133.1 **5 Claims**



1. An extrusion apparatus for food material comprising an outer conduit means adapted to be connected at its inlet to a dough material supply source, a die plate means having an orifice mounted in connection to the discharge end of said outer conduit means, and two inner conduit means arranged substantially along the longitudinal axis within said outer conduit means, one of said inner conduit means being adapted to be connected to another food material supply source.

4,259,052

TRANSFER PRESS

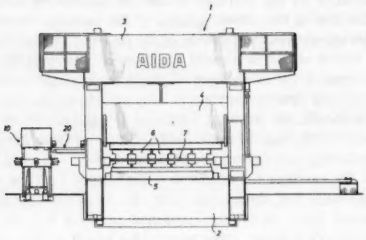
Shozo Imanishi, Sagamihara; Fumiaki Umezawa, Kanagawa; Toshiya Ishida, Hachioji, and Harutsugu Nakayama, Sagamihira, all of Japan, assignors to Aida Engineering, Ltd., Sagamihara, Japan

Continuation of Ser. No. 941,639, Sep. 12, 1978, abandoned. This application Jul. 12, 1979, Ser. No. 56,974

Claims priority, application Japan, Jul. 15, 1978, 53-86440

Int. Cl.³ B29C *3/06*

U.S. Cl. 425—135 **17 Claims**



1. A transfer press apparatus comprising:

a transfer press having a plurality of stages and a plurality of exchangeable dies;

a blank supply mechanism for supplying blanks;

a blank transport mechanism between said blank supply mechanism and said transfer press for carrying blanks from the said blank supply mechanism to the first stage of said transfer press;

a transfer feed mechanism including exchangeable feed bars extending in the direction of the stages of said transfer press;

a die exchange mechanism for automatic exchange of the dies of said transfer press;

a feed bar exchange mechanism for exchanging said feed bars together with said dies when the dies are exchanged by said die exchange mechanism;

a cushion cylinder at each stage of said transfer press;

a cushion pressure adjusting mechanism connected to each cushion cylinder for supplying necessary pressure to said cushion cylinder and depressurizing said cylinders to free them from the remainder of the transfer press during a die exchange operation; and

a program control mechanism connected at least to said transfer feed mechanism, said die exchange mechanism, and said feed bar exchange mechanism for controlling the operation of said mechanism according to the processing of the blanks in said apparatus.

4,259,053

APPARATUS FOR AGGLOMERATING POWDER-FORM MATERIAL

Christian Wahli, Bern, Switzerland, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Mar. 5, 1979, Ser. No. 17,405

Claims priority, application Switzerland, Mar. 14, 1978, 2745/78

Int. Cl.³ B29G *7/00*

U.S. Cl. 425—222 **5 Claims**

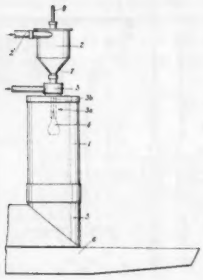
1. An agglomeration apparatus comprising:

(a) an agglomeration chamber;

(b) a distributor for particles to be agglomerated, said distributor communicating with said chamber so that particles disposed in said distributor may be fed into said chamber;

(c) means for projecting a stream of moistening fluid into said chamber along a predetermined path so that such stream of fluid will entrain particles fed into said agglomerating chamber from said distributor for motion along said path and such particles will be mixed with said fluid and agglomerated thereby;

(d) a fixed obstacle generally conical in shape, said obstacle being disposed in said chamber on said path, said obstacle



being coaxial with said path, the apex of said obstacle pointing upstream, whereby said fluid and said particles will impinge on said obstacle; and

(e) means for collecting and drying the agglomerated particles.

4,259,054

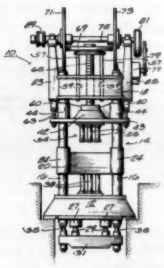
BRICK PRESS FRAME HAVING PRESTRESSED COLUMNS

William T. Savage, Lemont, Ill., assignor to Wehr Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 966,106, Dec. 4, 1978, abandoned. This application Nov. 26, 1979, Ser. No. 97,129

Int. Cl.³ B30B *1/00, 11/00*

U.S. Cl. 425—344 **17 Claims**



1. A press for forming articles from compressed refractory material, the press comprising:

a press bed,

a crown spaced from said press bed,

means for supporting said press bed and said crown in spaced apart relation, said supporting means including a plurality of tie rods, each of said tie rods having opposite ends, one of said opposite ends extending through at least a portion of said bed and engaging said bed, and the other of said opposite ends extending through at least a portion of said crown and engaging said crown, each of said tie rods being surrounded by an elongated hollow member, said elongated hollow members each including opposite ends, one of said opposite ends being positioned adjacent said bed and the other of said opposite hollow member ends being positioned adjacent said crown, a mold supported by said hollow members between said bed and said crown, said mold including a mold cavity for supporting refractory material therein,

a press member supported for movement between a first position and a position wherein said press member compresses refractory material in said mold cavity,

means for selectively forcing said press member into compressing engagement with the refractory material in said mold cavity, said means for forcing applying a torque on said crown when said press member compresses the refractory material, and

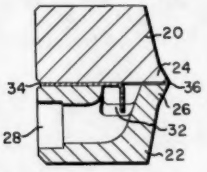
means for subjecting said tie rods to tensile stress and for subjecting said hollow members to compressive stress and for causing said tie rods and said columns to resist twisting of said crown with respect to said bed when said press member compresses the refractory material in said mold cavity.

4,259,055

COATING APPARATUS

William G. O'Brien, Towanda, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 1, 1979, Ser. No. 80,457
Int. Cl.³ B29F *3/04*
U.S. Cl. 425—376 A **4 Claims**



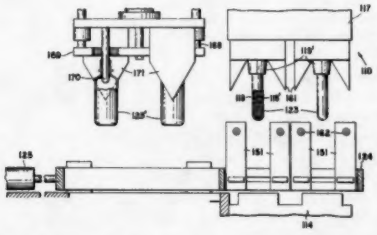
1. An extruder including mating die plates and a shim located between the plates to define an extrusion slot, one of said plates having a cavity opening into said slot, the improvement comprising provision of an integral flap bent laterally from the shim and extending into the cavity.

4,259,056

BOTTLE-MOLDING SYSTEM

Herbert Rees, Willowdale, and Robert D. Schad, Schomberg, both of Canada, assignors to Husky Injection Molding Systems Limited, Ontario, Canada

Division of Ser. No. 894,376, Apr. 7, 1978, Pat. No. 4,209,290. This application Aug. 16, 1979, Ser. No. 67,009
Int. Cl.³ B29C *17/07*
U.S. Cl. 425—533 **2 Claims**



1. In a system for producing hollow elongate workpieces of thermoplastic material, in combination:

a vertical injection-molding machine including a lower mold portion provided with at least one cavity, an upper mold portion vertically separable from said lower mold portion and provided with at least one elongate hollow core depending into said cavity in a mold-closed position, and clamp means for relatively reciprocating said mold portions;

a horizontally movable carriage at the level of a gap formed between said mold portions in a mold-open position;

drive means synchronized with said clamp means for inserting said carriage into said gap in said mold-open position, said carriage being provided with at least one blow-molding cell split into half-shells and alignable with said core upon insertion into said gap for receiving a workpiece molded in said cavity and adhering to said core, said clamp means being programmed to lower said core with the adhering workpiece into the blow-molding cell aligned therewith;

blowing means synchronized with said clamp means for admitting a high-pressure gas to the interior of the lowered core for inflating the workpiece in said blow-molding cell;

first camming means on said upper mold portion engageable with coacting formations on said half-shells for holding said blow-molding cell closed until said core is retracted therefrom by said clamp means; and

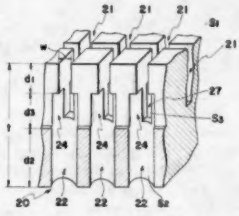
unloading means adjacent said injection-molding machine for removing the workpiece from said blow-molding cell upon lateral withdrawal of said carriage from said gap, said unloading means being provided with second camming means engageable with said coacting formations for separating said half-shells.

4,259,057

METHOD OF CONTINUOUSLY EXTRUDING AND MOLDING CERAMIC HONEY-COMB SHAPED MOLDINGS AND DIE FOR USE IN THE CONTINUOUS EXTRUDING OPERATION THEREOF

Kazunobu Abe, Izumi; Shoichi Tamura, and Tosiaki Matsuda, both of Sakai, all of Japan, assignors to Saki Chemical Industry Co., Ltd., Japan

Filed Dec. 29, 1978, Ser. No. 974,584
Int. Cl.³ B29F *3/04*
U.S. Cl. 425—463 **2 Claims**



1. A die for extruding ceramic honey-comb shaped moldings which comprises:

(a) a die body having opposed inlet and outlet faces, said die body having a thickness between said faces of $d_1+d_3+d_2$, d_1, d_3 and d_2 each being a predetermined distance the sum of which is said thickness, having

(b) a plurality of independent parallel extrudable molding material inlet channels extending from the inlet face of the die toward the outlet face of the die a distance which is d_2+d_3, and

(c) a plurality of honey-comb molding channels forming a shape in accordance with the core unit of the ceramic honey-comb to be molded by the die, extending from the outlet face of the die toward the inlet face of the die a distance which is d_1+d_3,

(d) each of said inlet channels intersecting at least one of said molding channels to form secondary channels comprising the interior portions of said molding channel, with a depth of d_3, between the terminal end of the inlet channel and the interior end of the molding channel, said secondary

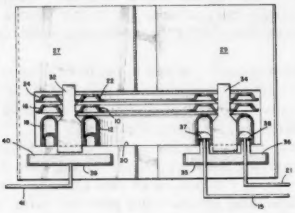
channels adapted to provide lateral flow of molding material within the molding channel between molding material inlet channels thereby providing a strong, void free extruded molding.

4,259,058

BURNER APPARATUS USING VAPORIZED FUEL

Anthony Gottwald, and Otto Gottwald, both of 50 Debussy La., Ventura, Calif. 93003

Filed Aug. 8, 1979, Ser. No. 64,874
Int. Cl.³ F23D *11/44*
U.S. Cl. 431—220 **14 Claims**



1. A burner apparatus using vaporized fuel including, in combination:

(a) at least one air/fuel mixer plate lying substantially in a horizontal plane having a plurality of openings facing upwardly;

(b) at least one vapor generator member defining an elongated cavity with a plurality of fuel vapor outlet ports passing through the top wall of the cavity in positions spaced below said openings in said air/fuel mixer plate, respectively; and

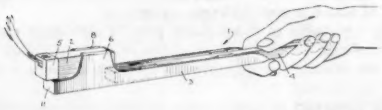
(c) a first liquid fuel line communicating with an interior portion of said cavity for introducing liquid fuel therein, the vertical spacing between and the dimensioning of said air/fuel mixer plate openings and vapor generator member outlet ports being such that fuel vapor passing upwardly through said ports draws air upwardly around said member into the space between the member and plate and up through said openings in said plate to mix with said fuel vapor and provide an efficiently combusting flame after ignition has taken place.

4,259,059

EXTENSION LIGHTER

Vernon D. Roosa, 184 Wood Pond Rd., West Hartford, Conn. 06107, and Peter V. Roosa, 253 Fairview Ave., West Hartford, Conn. 06514

Filed Aug. 15, 1979, Ser. No. 66,816
Int. Cl.³ F23Q *2/00*
U.S. Cl. 431—254 **17 Claims**



1. An extension lighter for remote ignition comprising the combination of:

a lighter having a movable means for ignition and for being extinguished;

said movable means comprising a movably mounted member adapted for movement in one direction for ignition and being spring loaded for movement in the opposite direction for extinguishing;

an elongated holder having means for removably mounting said lighter at an outer end, means engaging said movable means for slideably mounting a plunger; and

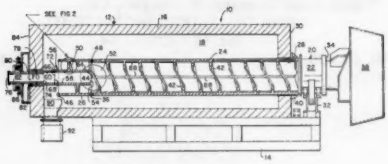
an elongated plunger slidably mounted on said holder with its outer end in engagement with said lighter, whereby relative movement between said lighter and its said movable means results from relative movement of said holder and said plunger.

4,259,060

DISCHARGE END STRUCTURE FOR ROTARY RETORTS

Frank Korzeb, Westfield, and William I. Bayly, Livingston, both of N.J., assignors to AGF Inc., Elizabeth, N.J.

Filed Oct. 15, 1979, Ser. No. 84,783
Int. Cl.³ F27D *1/16*; F27B *6/08, 7/32, 7/14*
U.S. Cl. 432—3 **31 Claims**



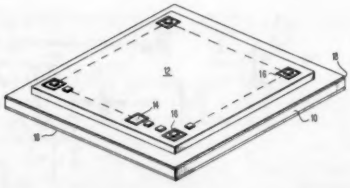
1. A discharge end structure for a rotary retort, comprising a rotatable casing, having a hollow interior and a pair of open ends; transporting means disposed within said casing and rotatable therewith for transporting workpieces through said casing from one end to the other end in response to the rotation of said casing; and supporting means disposed within said casing and directly cooperating with said transporting means for supporting said casing for rotation about a longitudinal axis thereof extending from said one end to said other end, whereby workpieces are dischargeable directly from said other end of said casing.

4,259,061

METHOD OF ACHIEVING UNIFORM SINTERING SHRINKAGE IN A LAMINATED PLANAR GREEN CERAMIC SUBSTRATE AND APPARATUS THEREFOR

Derry J. Dubetsky, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 7, 1979, Ser. No. 101,305
Int. Cl.³ F27B *14/00*; F27D *5/00*
U.S. Cl. 432—13 **8 Claims**



5. A setter plate for supporting a planar green ceramic substrate during a sintering operation, which plate minimizes shrinkage distortion comprising

a flat plate of refractory metal selected from the group consisting of Mo, Ta, W and high temperature alloys which include major proportions of refractory metals,

a thin ceramic coating on at least the top work supporting surface of said flat plate for supporting a ceramic substrate during a sintering operation.

4,259,062

APPARATUS FOR COOLING OF CEMENT CLINKER OR THE LIKE

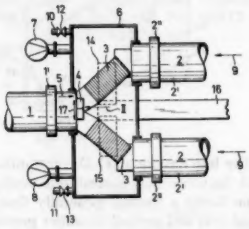
Hubert Ramesohl, Bergisch Gladbach; Horst Herchenbach, Troisdorf, and Karlheinz Schröder, Cologne, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Jan. 17, 1979, Ser. No. 4,170

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1978, 2801967

Int. Cl.³ F27D *15/02*

U.S. Cl. 432—78 3 Claims



1. An apparatus for the cooling of cement clinker or the like being discharged from a rotary kiln, said apparatus comprising:

at least two pipe coolers arranged in parallel with each other,

at least two air cooled grate coolers, each grate cooler being arranged to deliver partly cooled material to one of said pipe coolers, and

adjustably positionable distributor means positioned to proportion the discharge of said rotary kiln selectively between each of said grate coolers.

4,259,063

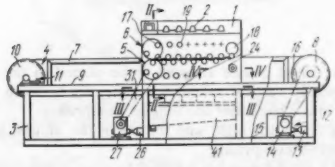
APPARATUS FOR A HEAT TREATMENT OF PRODUCTS

Evgeny T. Spirin, ulitsa Usacheva, 29, korpus 3, kv. 203; Vladimir V. Shakhov, ulitsa Yablochkova, 31, kv. 73; Viktor V. Vagin, 9 Sokolnicheskaya ulitsa, 1, korpus 2, kv. 78; Kaletta M. Vainzof, ulitsa Poteshnaya, 2, kv. 34, and Zimel A. Bogushev, Universitetsky prospekt, 6, kv. 125, all of Moscow, U.S.S.R.

Filed Jul. 30, 1979, Ser. No. 62,120

Int. Cl.³ F27B *9/14*; F27D *3/00*

U.S. Cl. 432—124 2 Claims



1. An apparatus for a heat treatment of cylindrically shaped products, comrising: a compartment for heat treating said products; a heat radiation source and a conveying mechanism accommodated in said treatment compartment; a load-bearing belt conveyor of said conveying mechanism; a support belt of said load-bearing belt conveyor; upper and lower pairs of chain conveyors extending along the borders of said load-bearing belt; and discs cooperatively associated with said upper and lower pairs of chain conveyors and arranged to engage the borders of said support belt on either side thereof, with the discs of said lower chain conveyors being arranged symmetrically relative to the geometrical axes of the discs of the upper chain conveyors.

4,259,064

CERAMIC BURNER

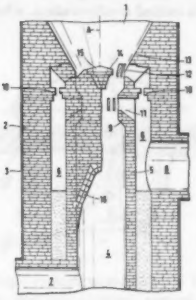
Walter Laux, Wiesbaden; Rudolf Hebel, Ginsheim; Peter Artelt, Goslar; Gerhard Esfeld, and Arnold Jacob, both of Salzgitter, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden and Stahlwerke Peine-Salzgitter AG, Peine, both of, Fed. Rep. of Germany

Filed Mar. 5, 1979, Ser. No. 19,011

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1978, 2809521

Int. Cl.³ F24H *1/00*

U.S. Cl. 432—222 10 Claims



1. Ceramic burner for the combustion chamber of air heaters and the like having at least a pair of supply channels concentric to the burner axis for the combustion media, air and fuel gas, respectively, and with at least one connection provided at a level between the supply channels in their outlet area, whereby in the center of the burner, a mixing body, preferably having a plurality of apertures for the passage of gas, is provided in the direction of flow behind a connection of the supply channels, the improvement wherein said mixing body is comprised of layers of ceramic bricks, said bricks having essentially circular sector shape, said bricks adjoining each other with their radial flanks to form circular layers, said bricks having upper and lower sides, at least one knob on one of said sides and at least one recess on the other of said sides, said knobs provided on said sides being engaged with corresponding recesses of its counterpart sides, and said bricks interlocking with horizontal and/or vertical recess and rib elements provided in the said radial flanks, and wherein the layers of said mixing body are carried tied in by masonry brackets directed from the wall of the central supply channel to the central axis of the burner.

4,259,065

ORTHODONTIC TRACTION APPARATUS

Irvin S. DeWoskin, St. Louis, Mo., assignor to Orthoband Company, Inc., Barnhart, Mo.

Filed Feb. 1, 1979, Ser. No. 8,432

Int. Cl.³ A61C *3/00*

U.S. Cl. 433—5 6 Claims

1. Orthodontic traction apparatus for applying traction to the teeth in a patient's mouth via an orthodontic instrumentality on the teeth comprising:

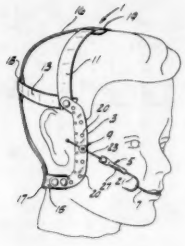
headgear including a pair of side members adapted to be worn on opposite sides of the patient's head adjacent the patient's ears;

each side member having a tensioning assembly associated therewith for attachment to said instrumentality for applying traction to the teeth;

each tensioning assembly being adapted to develop traction upon being stretched, and comprising means at one end

thereof constituting its forward end adapted to be attached to said orthodontic instrumentality and a fastening rod at its other end constituting its rearward end adjacent said side member;

and coupling means between the fastening rod of each tensioning assembly and its associated side member having a locked configuration and an unlocked configuration, said coupling means mounting said fastening rod on said side member for pivoting relative to said side member about an axis extending generally in side-to-side direction with respect to the patient's head and for longitudinal sliding movement of said rod in said coupling means to infinite positions within a range of adjustment when the coupling means is in its unlocked configuration, and for securing said fastening rod against longitudinal sliding movement of said rod in said coupling means when said coupling means is in its locked configuration, whereby traction of a



predetermined magnitude may be developed by sliding said fastening rod in said coupling means with said coupling means in its unlocked configuration and maintained by placing said coupling means in its locked configuration, each side member having a series of holes of the same diameter at different elevations each adapted to receive said coupling means, said coupling means comprising a screw-threaded bolt having a head at one end thereof and means slidably receiving the respective fastening rod, and a nut threaded on the bolt at its other end, said bolt being received in one of said holes in pivoting engagement and extending beyond the sides of said side member, said means slidably receiving the respective fastening rod comprising a recess in the bolt extending across the bolt along a central longitudinal plane thereof, said recess being of a width slightly greater than that of the fastening rod.

4,259,066

RETRACTION MECHANISM FOR DENTAL UNITS AND THE LIKE

Helmut Pietschmann, Karlsbad, Fed. Rep. of Germany, assignor to Sybron Corporation, Rochester, N.Y.

Filed Apr. 13, 1979, Ser. No. 29,731

Claims priority, application Fed. Rep. of Germany, May 30, 1978, 2823513

Int. Cl.³ A61G *1/14*

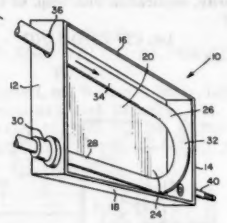
U.S. Cl. 433—78 **9 Claims**

1. A retraction mechanism for a utility supply line of dental units of the type having at least one instrument connected to a utility supply line so the instrument can be moved between a storage position on the unit to an in-use position spaced from the unit, the retraction mechanism providing for retraction of the utility line back into the unit as the instrument is moved from the in-use position to a storage position comprising:

(a) a housing having spaced side walls defining sides of a utility line storage chamber;

(b) said utility line having a portion of its length forming a generally U-shaped loop extending into said chamber, one leg of said U-shaped loop being fixed with respect to said housing and the other leg being movable into and out of said chamber;

(c) said U-shaped loop dividing said storage chamber into two portions, a first portion being defined by the volume lying within the legs of said U-shape and a second portion being defined by the volume of said storage chamber located about said U-shaped loop;



(d) said utility line having an O.D. substantially the same as the width between said spaced side walls whereby said utility line forms a sliding, generally fluid tight seal between said first and second chamber portions; and

(e) means for creating a differential pressure between said first and second chamber portions and across said generally U-shaped loop for moving said utility supply line into said housing.

4,259,067

COMBINED SALIVA EJECTOR, TONGUE RETRACTOR AND THROAT PROTECTOR

David P. Nelson, 6303 Osgood Ave. North, Stillwater, Minn. 55082

Continuation-in-part of Ser. No. 844,635, Oct. 25, 1977, abandoned. This application Mar. 6, 1979, Ser. No. 18,032

Int. Cl.³ A61C *17/04*

U.S. Cl. 433—93 **9 Claims**

1. A dental device adapted to be placed in the mouth in substantially vertical orientation generally between the inside of the lower teeth and the tongue, comprising:

(a) a frame to retain said device in the mouth, said frame further comprising:

(i) a palatal member adapted to engage the mouth generally at the roof thereof;

(ii) a lingual member connected to said palatal member to engage the mouth generally at the floor thereof; said lingual member having a first portion adapted to be disposed generally above the mandibular occlusal plane and to extend outward to engage the lower teeth and a second portion adapted to extend generally downward below the mandibular occlusal plane to engage the floor of the mouth;

(b) a shield member affixed to said second portion and sized to shield the tongue from the lower teeth whereby the tongue pressing against said shield member serves to stabi-

lize said device against lateral displacement in the mouth with said second portion retained against the inside of the gums below the teeth;

(c) means for resiliently biasing said palatal and lingual members in a direction away from each other whereby upon placement of said device in the mouth said device is in compressive engagement between the floor and roof thereof; and

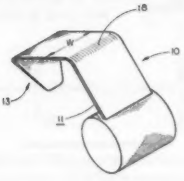
(d) means on said palatal member and said first portion of said lingual member for engaging the patient's teeth.

4,259,068

ORAL RETRACTOR

Dennis B. Stephens, 15171 El Rancho Ave., Visalia, Calif. 93277

Filed Jun. 18, 1979, Ser. No. 49,213
Int. Cl.³ A61C 5/00
U.S. Cl. 433—140 **1 Claim**



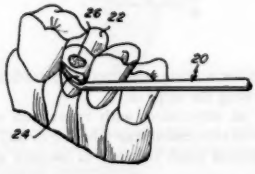
1. Flat metal strip of unilateral construction, hook shaped end having tapered edges adapted to be inserted the mouth of a patient in engagement with the lip thereof while said patient is in a prone position said strip being bent intermediate the ends thereof in such fashion as to bring the hooked end and the end remote therefrom into approximate parallel alignment, and means defining a weight secured to said remote end and having mass sufficient to cause retraction of the lip when said hook end is placed in the patient's mouth.

4,259,069

HAND TOOL FOR FINISHING DENTAL FILLINGS

Leopold P. Lustig, Newton Centre, Mass., assignor to Brasseler, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 964,974
Int. Cl.³ A61C 3/02
U.S. Cl. 433—144 **4 Claims**



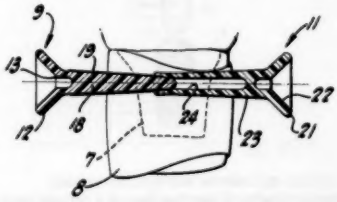
1. A hand tool for finishing crown contours of dental fillings made of composite resin restorative materials which set to a hardened shatterable state, comprising, an elongated handle and a blade member for shaving such restorative material forming the filling, said member connected directly to and contiguous with the handle and extending at an obtuse angle to the longitudinal axis of the handle, said shaving member having a substantially flat face also extending at an obtuse angle to said longitudinal axis, said face having means defining a sharpened blade edge extending along one side of said face, said sharpened blade edge having a slight concaved arcuate contour substantially to match the crown contour of the tooth, and constructed of a hard non-ferrous tungsten carbide material to prevent restorative material discoloration and contamination, said blade edge terminating in a tip displaced away from the center line of the elongated handle by a dimension at least as great as the length of the blade edge, said blade edge having a length comparable to the maximum width of the shaving member face, said shaving member face having a length on the order of three millimeters, said shaving member face also having a length on the order of twice the maximum width thereof, the length of the blade edge also being on the same order as the maximum width of the blade member face.

4,259,070

DENTAL WEDGE SYSTEM

Kenneth B. Soelberg, Menlo Park; Marvin M. Stark, Los Altos Hills, and Akia Yamaguchi, Los Angeles, all of Calif., assignors to Marvin M. Stark Research Foundation, Santa Clara, Calif.

Filed Nov. 26, 1979, Ser. No. 97,140
Int. Cl.³ A61C 7/00
U.S. Cl. 433—149 **5 Claims**



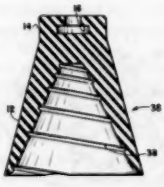
1. A dental wedge system comprising a female wedge including a tool-engaging disc having a central depression and a female stem having a central hollow, said stem tapering externally from a relatively large merger with said disc to a relatively small free end, and a male wedge including a tool-engaging disc having a central depression and a male stem tapering externally from a relatively large merger with said disc to a relatively small free end, said male stem being receivable in said central hollow of said female stem and frictionally engageable therewith.

4,259,071

DENTAL POLISHING CUP FOR USE WITH A ROTARY DENTAL HAND PIECE

Fuller Warden, 1231 E. 30th Pl., Tulsa, Okla. 74114, and Eugene W. Lewis, 5415 S. 68 E. Pl., Tulsa, Okla. 74145

Filed Jul. 30, 1979, Ser. No. 61,765
Int. Cl.³ A61C 3/06
U.S. Cl. 433—166 **7 Claims**



1. A polishing cup for cleaning and polishing teeth for use with a rotary hand piece and a dental cleaning polishing compound, the cup comprising; a substantially truncated conical shaped body member of flexible elastic material, attachment means provided at a first small end thereof, a substantially truncated conical shaped cavity within the second large end of the cup for containing cleaning and polishing compound therein, and at least one spiral guide means around the peripheral wall of the cavity, each spiral guide means extending from within the cavity outwardly around the wall of the cavity in

the direction of intended rotation of the cup for coacting with the teeth to force the polishing compound inwardly toward the center of and upwardly within the cavity within the cup.

4,259,072

CERAMIC ENDOSSEOUS IMPLANT

Masaya Hirabayashi, Yokaichi, and Haruyuki Kawahara, Moriguchi, both of Japan, assignors to Kyoto Ceramic Co., Ltd., Japan

Continuation-in-part of Ser. No. 787,623, Apr. 4, 1977, abandoned. This application Jul. 25, 1979, Ser. No. 60,649

Int. Cl.[3] **A61C** *8/00;* **A61F** *1/24*

U.S. Cl. 433—173 **23 Claims**

1. A ceramic endosseous implant, comprising:

a composite structural member having a ceramic outer member of polycrystalline alumina ceramic and a ceramic inner core member of single crystalline alumina ceramic;

said outer member having a generally cylindrical shape and a cavity with micro-apertures on the outer surface thereof for permitting the penetration of a new bone and connective tissue thereinto;

said inner member, of alumina ceramic, with a post portion adapted to be inserted in said cavity, a flange portion adjacent said post portion for the covering of said cavity, and a mounting post for use in attaching a prothesis; and

said inner core member bonded to said outer member by a heat resistant glass cement having a coefficient of thermal expansion approximating that of alumina ceramic.

4,259,073

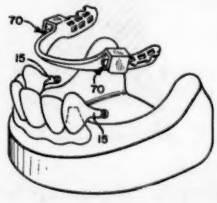
EXTRA CORONAL ATTACHMENT

James D. Emmons, 15 E. Franklin, Bellbrook, Ohio 45305

Continuation-in-part of Ser. No. 760,080, Jan. 17, 1977, abandoned. This application Jun. 29, 1978, Ser. No. 920,286

Int. Cl.[3] **A61C** *00/00*

U.S. Cl. 433—177 **3 Claims**



1. An extra coronal attachment comprising

a cylindrical anchor member formed as part of a crown adapted to be fitted to a natural tooth and having an axis extending in predetermined angular relation over the jaw line;

a cylindrical anchor surface formed concentrically in said anchor member and of a different diameter than said member;

and a clip adapted for inclusion in a partial denture

said clip having an elongated semi-cylindrical interior cavity with an opening extending the length thereof and constructed to fit closely over said anchor member, and

rib means formed in the interior of said cavity concentrically therewith and arranged to interfit with said anchor surface allowing rotational movement of said clip around said axis when said clip is attached to said anchor member and resisting movement of said clip along said anchor member in a direction parallel to said axis,

said clip being sufficiently flexible along the sides of said opening to be forced onto and off of said anchor member from a side thereof,

whereby said clip can flex partially in a direction transverse to said axis in response to stress forces transmitted in the form of a rocking action of the denture, the rotation and flexing of said clip thereby relieving said anchor member from twisting forces.

4,259,074

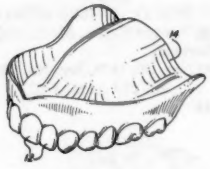
METHOD FOR MAKING DENTURES

John A. Link, Scottsdale, Ariz., assignor to TFT, Ltd., Scottsdale, Ariz.

Filed Oct. 25, 1978, Ser. No. 954,416

Int. Cl.[3] **A61C** *9/00*

U.S. Cl. 433—214 **1 Claim**



1. A method for making dentures with artificial teeth, said method comprising the steps of:

(a) forming an impression with impression material supported on an impression tray which tray includes replicas of the artificial teeth that are to become a part of the dentures;

(b) inserting the impression tray and supported impression material in investment material;

(c) curing the investment material to form a mold;

(d) removing the impression tray and impression material from the mold to leave a cavity duplicative of the impression tray and impression defined by the supported impression material;

(e) individually inserting artificial teeth corresponding to the replicas of artificial teeth defined by the impression tray in the parts of the mold cavity formed by the replicas of the artificial teeth;

(f) packing the remaining part of the mold cavity with denture base material; and

(g) curing the denture base material to form the denture with artificial teeth embedded in the denture base material.

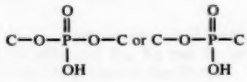
4,259,075
METHOD OF FILLING A TOOTH CAVITY

Junichi Yamauchi, Kurashiki; Eiichi Masuhara, Bunkyo-Ward; Nobuo Nakabayashi, Matsudo; Kyoichiro Shibatani, Kurashiki, and Tooru Wada, Takatsuki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Division of Ser. No. 936,759, Aug. 25, 1978, which is a continuation of Ser. No. 778,734, Mar. 17, 1977, abandoned. This application Sep. 24, 1979, Ser. No. 78,048
Claims priority, application Japan, Mar. 17, 1976, 51-30045; Nov. 29, 1976, 51-143807; Nov. 30, 1976, 51-145049
Int. Cl.[3] A61K 6/02
U.S. Cl. 433—217 25 Claims

1. A method for filling a tooth cavity, comprising:

(i) applying to the walls of the tooth cavity a lining composition comprising a phosphoric or phosphonic acid ester compound containing at least one radical polymerizable vinyl group and at least one



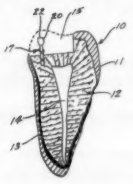
group, wherein said lining composition contains said phosphoric or phosphonic acid ester compound in a proportion of not less than 0.1 weight percent, as phosphorus, and then

(ii) filling the remainder of the cavity with a dental filling material which comprises a polymerizable monomer, a filler and a curing agent.

4,259,076
METHOD AND APPARATUS FOR CONNECTING AN ARTIFICIAL TOOTH PORTION TO A DENTIN PORTION

James F. M. Yanney, 8230 Elizabeth Dr., Lincoln, Nebr. 68505

Filed Oct. 9, 1979, Ser. No. 82,441
Int. Cl.[3] A61C 5/04
U.S. Cl. 433—225 11 Claims



1. Apparatus for connecting an artificial replacement tooth portion to a dentin portion of a tooth having a cylindrically shaped bore therein comprising:

an elongated cylindrical member having a generally circular cross sectional shape

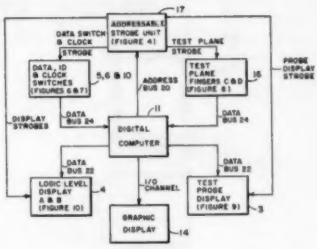
barb means attached to, formed on, and disposed around the periphery of one end portion thereof for directly engaging the dentin portion within said bore; and

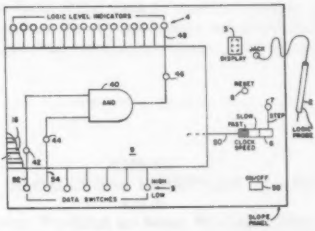
a smooth cylindrical surface on the other end portion dimensioned to releasably engage a force receiving means in the form of an enlarged hollow cap member, which has an external force applied thereto, to drive the apparatus into the cylindrically shaped bore.

4,259,077
WIRELESS LOGIC TRAINER

Joseph T. Keweza, 6606 Robinhood La., Huntsville, Ala. 35806

Filed Aug. 31, 1978, Ser. No. 938,733
Int. Cl.[3] G09B 23/18
U.S. Cl. 434—118 9 Claims


ADDRESSABLE STROBE UNIT (FIGURE 4)
DATA SWITCH & CLOCK STROBE
TEST PLANE STROBE
PROBE DISPLAY STROBE
DATA, ID & CLOCK SWITCHES (FIGURES 6 & 7)
ADDRESS BUS 20
TEST PLANE FINGERS C & D (FIGURE 8)
DISPLAY STROBES
DATA BUS 24
DIGITAL COMPUTER
DATA BUS 22
LOGIC LEVEL DISPLAY A & B (FIGURE 10)
I/O CHANNEL
TEST PROBE DISPLAY (FIGURE 9)
GRAPHIC DISPLAY



1. A training device for simulating electronic circuits comprising:

test panel means for indicating selectable simulated conditions of an electronic circuit in response to manual variation of input conditions, and adapted to respond to encoded circuit data for establishing a circuit to be simulated:

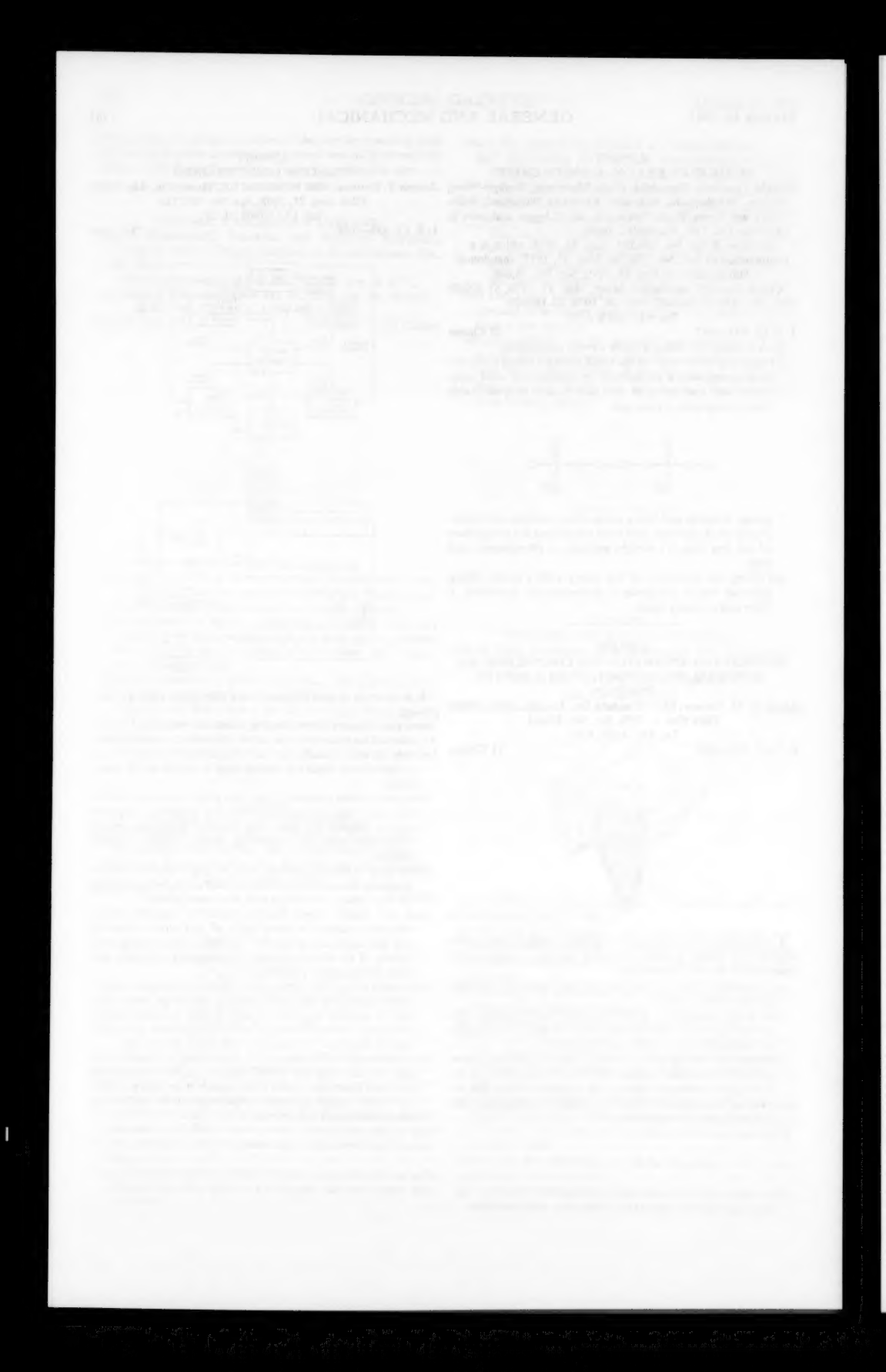
computer means coupled to said test panel means for receiving input data signals therefrom and outputing response signals thereto for indicating selected simulated circuit conditions and for providing gating control signals thereto;

a plurality of training circuit cards having respective circuit diagrams thereon for simulation, said cards being adapted for individually encoding said test panel means;

said test panel means having manually operable input switches coupled between parts of said circuit diagram and said computer means for simulation of changing conditions of an electron circuit by manually changing the state of respective switches;

a plurality of parallel, conductive metal strips disposed in the surface plane of said panel means, said strips being coupled to provide respective inputs to said computer means and being covered by one of said training cards when said card is disposed for encoding said panel means; and

an addressable strobe means for responding to control outputs of said computer means output signals to selectively gate said computer means input signals from said switches and metal strips and said output signals for indicating simulated circuit conditions.



4,259,078
HEAT-STABLE QUATERNARY AMMONIUM COMPOUNDS FOR FIBER LUBRICATING

Rolf Kleber, Neu-Isenburg, and Heinz Müller, Burgkirchen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

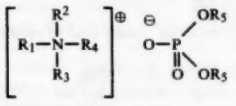
Continuation of Ser. No. 855,744, Nov. 29, 1977, abandoned. This application Jun. 5, 1979, Ser. No. 45,605

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1976, 2654794

Int. Cl.³ D06M *1/00, 13/34*

U.S. Cl. 8—115.6 **1 Claim**

1. A process for fiber lubricating during their manufacture wherein a compound of the formula



in which R_1 is C_8–C_{22} alkyl or alkenyl, R_2 is C_8–C_{22} alkyl or alkenyl or C_1–C_4 alkyl and R_3, R_4 and R_5 are identical or different C_1–C_4 alkyl is applied to the fibers.

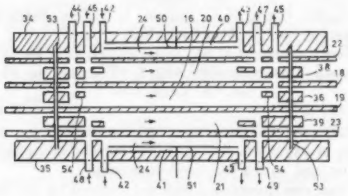
4,259,079
METHOD AND APPARATUS FOR ELECTRICAL SEPARATION OF MOLECULES

Alvin S. Blum, 2350 Del Mar Pl., Fort Lauderdale, Fla. 33301

Continuation of Ser. No. 898,998, Apr. 21, 1978. This application Dec. 26, 1978, Ser. No. 972,670

Int. Cl.³ G01N *33/56, 35/08*

U.S. Cl. 23—230 R **18 Claims**



11. A method of electrical separation of molecules in a continuously flowing fluid stream for analysis which includes the steps of:

(1) Passing a sample solution mixture through a first elongate fluid flow channel;

(2) Passing at least one other fluid through at least one other elongate fluid flow channel adjacent said first channel and separated therefrom by permeable membrane means;

(3) Applying electrical field means across said channels in a direction transverse to the direction of fluid flow to cause migration of certain electrically charged fluid components across said membrane means into another separate moving fluid stream in another said channel;

(4) Providing a short exit path for electrically migrating components and a relatively long path for exposure to said electrical field.

4,259,080
METHOD OF DETERMINING DISCONTINUITIES IN THE HEAT EXCHANGER OF A WARM AIR FURNACE

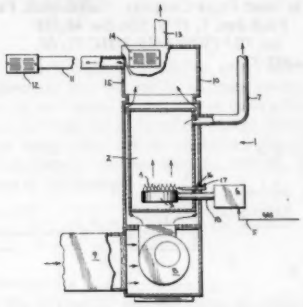
James F. Wunderlin, West Bend, Wis., assignor to Wisconsin Gas Company, Milwaukee, Wis.

Filed Sep. 18, 1979, Ser. No. 76,761

Int. Cl.³ G01N *31/00, 33/00*

U.S. Cl. 23—232 R **4 Claims**

1. A method of determining discontinuities in a heat exchanger of a warm air furnace unit comprising igniting a burner of a heat exchanger of a warm air furnace unit to thereby heat up the furnace while maintaining a blower fan inoperative, spraying the burner with a non-corrosive solution of a sodium compound while the furnace unit continues to



operate, contacting the air in an indirectly heated zone, downstream of the heat exchanger, with a blue flame of a torch, and checking the flame of the torch to ascertain whether the blue flame turns yellow, thereby indicating a deleterious leakage of combustion gas from the heat exchanger of the furnace.

4,259,081
PROCESS OF CALCINING LIMESTONE IN A ROTARY KILN

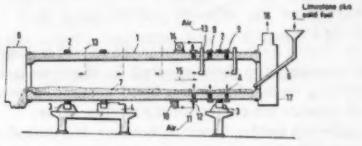
Gerhard Reuter, Frankfurt am Main; Wolfram Schnabel, Hattersheim, and Herbert Lausch, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 20, 1978, Ser. No. 898,254

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1977, 2719347

Int. Cl.³ F27B *7/36*

U.S. Cl. 23—293 R **7 Claims**

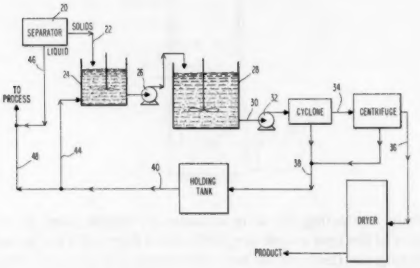


1. In a process for the calcining of limestone or hydrated lime by thermally treating the same with hot gases in a rotary kiln through which the kiln atmosphere and the limestone or hydrated lime charge are countercurrently passed and into which oxygen containing gases are introduced through shell pipes at a plurality of points, the improvement which comprises producing at least part of said hot gases by feeding solid carbonaceous fuel into the rotary kiln at the charging end thereof, injecting oxygen-containing gases through nozzle blocks into charge material disposed over said nozzle blocks at a horizontal region of the rotary kiln which is defined by a point along the length of the kiln where ignitable particles of said solid fuel first appear and a second point along the length of said rotary kiln which is spaced from the charging end of said rotary kiln by not more than 50% of the length of the kiln, and injecting oxygen-containing gases through shell pipes into the free space of said rotary kiln at least into said horizontal region.

4,259,082
PROCESS FOR PURIFYING SODIUM SULFATE CRYSTALS

Gregory J. Gianforcaro, West Chester; Robert E. Lighton, Media, both of Pa., and Jerald M. Dougherty, Winslow, Me., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Jun. 7, 1979, Ser. No. 46,338
Int. Cl.[3] C01D 5/16; D21C 11/10
U.S. Cl. 23—302 T 2 Claims



1. A purification process for sodium sulfate crystals comprising:

(a) slurrying impure sodium sulfate crystals obtained intermittently from a chlorine dioxide generation process with a mother liquor in a slurry tank;

(b) transferring the slurry into a first holding tank;

(c) transferring slurry from the first holding tank to a separating step;

(d) separating the crystals from the mother liquor without substantial evaporation of the mother liquor to yield crystals having less than 10 % mother liquor remaining thereon;

(e) drying the crystals after separation step d to evaporate the remaining mother liquor to produce a sodium sulfate crystal in the particle size of about 100 % −45 mesh and at least 90 % +200 mesh (Tyler series) and having less than 0.2 % chloride ions;

(f) collecting the mother liquor from the separation step;

(g) transferring the collected mother liquor to a second holding tank;

(h) transferring mother liquor from the second holding tank and recycling it to the slurry tank for slurry make up;

(i) removing mother liquor as a bleed stream to control the total chloride ion content of the mother liquor;

(j) transferring mother liquor without crystals instead of the transfer of slurry in from the steps b and c when the amount of impure sodium sulfate crystals from the chlorine dioxide generation process is less than a predetermined amount for efficient operation of said separating step;

(k) pumping the mother liquor or slurry through conduits to effectuate transfer between the tanks in steps b, c, g, h and j without the addition of water during pumping;

(l) maintaining the mother liquor and slurry in said tanks and during transfer in steps b, c, g, h, and j at a pH of at least 7 and at a temperature greater than 65° C.(150° F.) by heating in the tanks and without adding heat through the transfer conduits; and

(m) flushing all transfer conduits with water at a temperature of about 65° C. or higher to remove all slurry and mother liquor prior to any cooling of the contents of said tanks and transfer conduits below 65° C. (150° F.) in preparation for a shut down of the process and cooling down of the transfer conduits;

4,259,083
PRODUCTION OF METALLURGICAL COKE FROM OXIDIZED CAKING COAL

Boleslaw Ignasiak, Edmonton, Canada, assignor to Alberta Research Council, Edmonton, Canada

Filed Mar. 22, 1979, Ser. No. 22,807
Int. Cl.[3] C10L 9/06; C10B 57/02
U.S. Cl. 44—1 F 4 Claims

1. A process for producing a metallurgical coke from caking coal which comprises:

artificially oxidizing the caking coal by heating it at a temperature less than about 350° C. in an oxygen-containing atmosphere for a period of time sufficient to oxidize part of the caking coal to a level of oxidation which will produce a metallurgical coke when the coal is subsequently carbonized; and

carbonizing the oxidized caking coal to produce metallurgical coke.

4. A caking coal blend comprising:

a first part of caking coal which has been artificially oxidized so that at least part of it is at a level of oxidation required to yield a metallurgical grade coke on subsequent carbonization; and

a second part of untreated caking coal, the oxidized coal and untreated coal being included in a weight ratio which will produce, on carbonization of the blend of coal, a metallurgical coke.

4,259,084
PRETREATMENT OF SOLID, NATURALLY-OCCURRING CARBONACEOUS MATERIAL

Ronald Liotta, Clark, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 969,494, Dec. 14, 1978, abandoned. This application Aug. 1, 1979, Ser. No. 62,809
Int. Cl.[3] C10L 9/02
U.S. Cl. 44—1 R 36 Claims

1. A method for improving properties of coal, by oxygen-alkylation or oxygen-acylation, which method comprises contacting the coal with a solution comprising:

(a) at least one quaternary base represented by the formula R_4QOR'' where each R is the same or different group selected from the group consisting of C_1 to about C_{20} alkyl and C_1 to about C_{20} aryl; Q is nitrogen or phosphorus; and R'' is selected from the group consisting of hydrogen, C_1 to about C_{10} alkyl, aryl, alkylaryl, arylalkyl and acetyl; and

(b) at least one compound represented by the formula R'X where R' is a C_1 to C_{20} alkyl or acyl group and X is selected from the group consisting of halides, sulfates, bisulfates, acetates and stearates; wherein X is attached to a primary or secondary carbon atom.

19. A method for improving properties of solid, naturally-occurring carbonaceous material having acidic sites which method comprises contacting the carbonaceous material with a solution comprising:

(a) at least one quaternary base represented by the formula R_4QOR'' where each R is the same or different group selected from the group consisting of C_1 to about C_{20} alkyl and C_1 to about C_{20} aryl; Q is nitrogen or phosphorus; and R'' is selected from the group consisting of hydrogen, C_1 to about C_{10} alkyl, aryl, alkylaryl, arylalkyl and acetyl; and

(b) at least one compound represented by the formula R'X where R' is a C_1 to C_{20} alkyl or acyl group and X is selected from the group consisting of halides, sulfates, bisulfates, acetates, and stearates; wherein X is attached to a primary or secondary carbon atom.

4,259,085

PELLETIZED FIXED SULFUR FUEL

Thomas E. Ban, South Euclid, and Ashok D. Rao, Euclid, both of Ohio, assignors to Dravo Corporation, Pittsburgh, Pa.

Division of Ser. No. 763,226, Jan. 27, 1977, Pat. No. 4,111,755, which is a continuation-in-part of Ser. No. 627,240, Oct. 30, 1975, abandoned. This application Apr. 24, 1978, Ser. No. 898,798

Int. Cl.³ C10L *5/00, 9/08*

U.S. Cl. 44—26 **2 Claims**

1. An oxidation fuel comprising pelletized, particulate sulfur-containing coal and a calcined base material with a large percentage of the sulfur being present in the form of a sulfide of the base material, said pelletized fuel being substantially free of hydrocarbonaceous, volatile matter, and graphite, and providing an intimate mixture of particles of about −65 mesh in size, which thereby enables sulfur fixation reactions to take place to fix the sulfur in the form of a sulfate by sulfatization to the ash constituents of the coal upon use of the pellets under oxidizing conditions as a fuel.

2. A fuel according to claim 1, wherein the calcined base material is CaO.

4,259,086

MULTIPURPOSE HYDROCARBON FUEL AND LUBRICATING OIL ADDITIVE

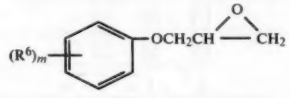
Warren H. Machleder, Blue Bell, and Joseph M. Bollinger, North Wales, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 813,027, Jul. 5, 1977, which is a continuation-in-part of Ser. No. 671,462, Mar. 29, 1976, Pat. No. 4,048,081, which is a continuation-in-part of Ser. No. 536,074, Dec. 24, 1974, abandoned. This application Oct. 31, 1979, Ser. No. 90,154

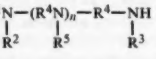
Int. Cl.³ C10L *1/22;* **C10M** *1/34;* **C07C** *93/14*

U.S. Cl. 44—58 **11 Claims**

1. A composition comprising a mixture of (1) a major proportion of a hydrocarbon fuel, a lubricating oil, or a mixture of a hydrocarbon fuel and a lubricating oil, and (2) a minor detergent amount of a multipurpose additive comprising the reaction product of (a) a glycidyl ether compound of the formula

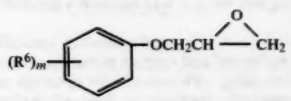


where R^6 is an aliphatic hydrocarbon group having at least 8 carbon atoms and m is 1–3, and (b) an amine having at least one amino group, said amine having two or more active hydrogen atoms, and wherein the mole ratio of (a) to (b) is at least 2:1, said amine being selected from aliphatic monoamines, cyclic amines, heterocyclic amines, aromatic amines, and aliphatic polyamines of the formula

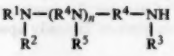


wherein R^1, R^2 and R^3 independently are hydrogen, C_1–C_6 alkyl substituted by $—NH_2$ or —OH, R^4 is a C_1–C_6 divalent hydrocarbon radical, R^5 is hydrogen or C_1–C_6 alkyl, and n is 0 to about 5.

7. A multipurpose additive for a hydrocarbon fuel, a lubricating oil, or a mixture of a hydrocarbon fuel and a lubricating oil, comprising the reaction product of (a) a glycidyl ether compound of the formula



where R^6 is an aliphatic hydrocarbon group having at least 8 carbon atoms and m is 1–3, and (b) an amine having at least one amino group, said amine having two or more active hydrogen atoms, and wherein the mole ratio of (a) to (b) is at least 2:1, said amine being selected from aliphatic monoamines, cyclic amines, heterocyclic amines, aromatic amines, and aliphatic polyamines of the formula



wherein R_1, R^2 and R^3 independently are hydrogen, C_1–C_6 alkyl substituted by $—NH_2$ or —OH, R^4 is a C_1–C_6 divalent hydrocarbon radical, R^5 is hydrogen or C_1–C_6 alkyl, and n is 0 to about 5.

4,259,087

ANTISTATS CONTAINING ACRYLONITRILE COPOLYMERS AND POLYAMINES

Michael I. Naiman, St. Louis; J. Irvine Knepper, Manchester, and Neil E. S. Thompson, St. Louis, all of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Dec. 15, 1978, Ser. No. 970,040

Int. Cl.³ C10L *1/22*

U.S. Cl. 44—62 **12 Claims**

1. An antistatic composition for addition to organic fluids to reduce the electrostatic charges thereof comprising

(1) an α-olefin-acrylonitrile copolymer and

(2) a polymeric polyamine.

4,259,088

DISTRIBUTING FLUIDS INTO FLUIDIZED BEDS

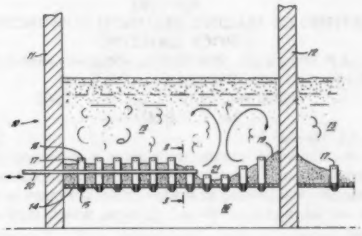
Gerald Moss, Oxford, England, assignor to The United States of America as represented by the Administrator of the Environmental Protection Agency, Washington, D.C.

Continuation of Ser. No. 625,619, Oct. 29, 1975, abandoned. This application Jan. 16, 1978, Ser. No. 881,980

Claims priority, application United Kingdom, Oct. 31, 1974, 47152/74

Int. Cl.³ B01J *8/18, 8/22;* **C01B** *2/14;* **F27B** *15/00*

U.S. Cl. 48—212 **15 Claims**



1. A fluidized bed apparatus comprising:

(a) a vessel having an interior space defined by vertical wall means;

(b) a bed of particulate material contained within said vessel;

(c) means for supporting said bed of particulate material within said interior of said vessel, said support means being provided with a plurality of openings for introduc-

tion of a fluidizing fluid into the bed, said support means spanning said vertical wall means in a generally horizontal plane;

(d) nozzles mounted on and extending vertically from the upper surface of said support means, each of said nozzles communicating with one of said openings to provide a flow passage for the fluidizing fluid, a first plurality of said nozzles having outlets in a horizontal plane above said upper surface of said support means and above a horizontal plane defined by the outlets of a second plurality of nozzles and laterally spaced therefrom, said nozzles cooperating to fluidize the particulate material above the outlets of said nozzles along a continuous contoured interface between the fluidized particulate material and unfluidized particulate material or non-fluidizable material forming part of said support means, said contoured interface having a plurality of structurally noncommunicating, separate and distinct depressions laterally spaced in a horizontal plane; and

(e) at least one conduit for introducing a second fluid, said conduit extending generally horizontally within the interior of the vessel, the length of said conduit running above the outlets of said second plurality of nozzles, above the support means and below the outlets of said first plurality of nozzles, the terminus of said conduit being located at a position laterally spaced between the vertical walls spanned by said bed support means and between nozzles of said first and second pluralities and protruding into a depression normally occupied by fluidized material.

4,259,089

GRINDING WHEEL CONTAINING GRAIN-COATED REINFORCEMENT FIBERS AND METHOD OF MAKING IT

Walter Waizer, Innsbruck, and Harald Helletsberger, Wattens, both of Austria, assignors to Tyrolit Schleifmittelwerke Swarovski K.G., Austria

Continuation of Ser. No. 932,623, Aug. 10, 1978, abandoned. This application Nov. 9, 1979, Ser. No. 92,755

Int. Cl.³ C09K *3/14*

U.S. Cl. 51—295 **10 Claims**

4. A high speed grinding disc comprising: a synthetic resin matrix carrying abrasive grains and coated reinforced fibers, said coated reinforcement fibers having an outer coating of synthetic resin having embedded therein fine grain of a material having substantially the same hardness as said abrasive grain with a diameter substantially smaller than that of said fiber, said fine grain covering said fiber and protecting said fiber from damage from abrasive grain pressed against said fiber during the formation of said high-speed grinding disc.

4,259,090

METHOD OF MAKING DIAMOND COMPACTS FOR ROCK DRILLING

Harold P. Bovenkerk, Worthington, Ohio, assignor to General Electric Company, Worthington, Ohio

Filed Nov. 19, 1979, Ser. No. 95,903

Int. Cl.³ B24D *3/02*

U.S. Cl. 51—309 **9 Claims**

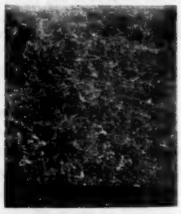
1. An improved method for making a composite diamond compact having an inner polycrystalline diamond mass surrounded by and bonded to an outer mass of a material selected from metals, metal alloys and cermets, which method comprises:

A. Positioning in an enclosure a sample comprising a formed hollow mass of a material selected from metals, metal alloys and cermets, which contains a diamond forming catalyst and a mass of non-diamond carbon within the formed hollow mass and in contact therewith;

B. Subjecting the sample to pressure-temperature conditions within the diamond stable region and above the catalyst melting point;

C. Reducing the temperature and pressure of the sample; and

D. Recovering the resulting composite diamond compact; wherein the improvement comprises disposing a mono-



layer of diamond seed crystals having a largest dimension of from 0.1 to 500 microns at the interface between the hollow outer mass and the inner mass of non-diamond carbon in Step A.

4,259,091

ADIABATIC ADSORPTION METHOD FOR GAS PURIFICATION OR SEPARATION

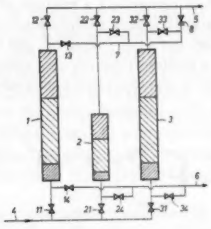
Christian Benkmann, Munich, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Sep. 17, 1979, Ser. No. 76,359

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1978, 2840357

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—25 **8 Claims**



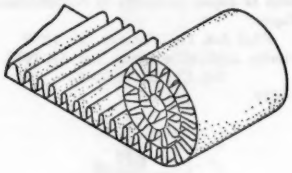
1. In an adiabatic gas-adsorption method wherein a plurality of adsorbers are switchable through cycles including a regeneration phase and an adsorption phase and in which each regeneration phase includes at least two pressure-relief stages, at least one pressure-buildup stage and a purging stage, the improvement in which said adsorbers are at least three in number and are functionally subdivided into a main group and an auxiliary group, said main group including at least one main adsorber and said auxiliary group including at least one auxiliary adsorber, and said auxiliary adsorber is operated with a contact time of a gas during its adsorption phase with its adsorbent which is less than the adsorption time of the main adsorber, at least one adsorber of one group in a pressure-relief or pressure-buildup stage being connected to an adsorber of the other group in a pressure-buildup or pressure-relief stage respectively for pressure equalization therebetween, and purge gas generated during a pressure-relief stage of an adsorber of one of said groups being used to scavenge an adsorber of the other of said groups during the purging stage thereof.

4,259,092

ADSORPTIVE MATERIAL

Tatsuki Matsuo; Nobuo Ishizaki, and Yoichi Suzuki, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Mar. 23, 1977, Ser. No. 780,453
Claims priority, application Japan, Mar. 23, 1976, 51/32227
Int. Cl.³ B01D *53/06;* **B32B** *3/28*
U.S. Cl. 55—78 **19 Claims**



1. A multi-layer member comprising multiple corrugated boards containing active carbon fiber in an amount of at least 10% by weight and having a volume density of at least 0.06 g/cc, the channels of the corrugated boards being arranged in substantially the same direction so as to permit a fluid flow through the channels along the surfaces of the corrugated boards, said carbon fiber having the characteristics of an equilibrium adsorption amount of benzene of not less than 200 mg/g and a benzene adsorption rate constant of not less than 0.2 min^{-1}.

4,259,093

ELECTROSTATIC PRECIPITATOR FOR AIR CLEANING

Antonios Vlastos, Sala; Peter Albertsson, Lidingö, and Rolf Eriksson, Bromma, all of Sweden, assignors to Elfi Elektrofilter AB, Lidkoping, Sweden

Continuation of Ser. No. 783,543, Apr. 1, 1977, abandoned. This application Dec. 12, 1978, Ser. No. 968,770
Claims priority, application Sweden, Apr. 9, 1976, 7604248
Int. Cl.³ B03C *3/08, 3/12*
U.S. Cl. 55—137 **10 Claims**

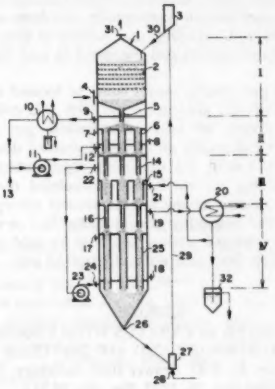
1. An electrostatic precipitator for air cleaning, comprising, a charging portion, a separation portion and a potential supply means connected to said charging and separation portions; said charging portion includes wires parallel to and located between a first plurality of mutually parallel metal sheets and having an electric potential different from said sheets, and which separation portion includes additional mutually parallel metal sheets between said first sheets, each of all said sheets having an electric potential different from adjacent sheets; said charging portion including two or more of said wires between each pair of said first sheets, and wherein the relative distance C between two or more of said wires located between two of said first parallel metal sheets lies within the interval described by the formula $C=(VT)/(n-k)$ where $k\epsilon\{0,n-2\}$ and where V is the particle speed, T the cycle time for a varying direct potential generated by the potential supply means, and where n is the number of wires, and that the distance C preferably is selected within the interval $0.6\cdot b \leqslant C \leqslant 1.2\cdot(V\cdot T)/2$ where b is the distance between each wire and the adjacent said first parallel sheets; retaining means provided for said sheets comprising rods provided with grooves into which the edges of said sheets are inserted; and electric conductors of strip-shape extend along two of said rods and are folded down into said grooves.

4,259,094

APPARATUS FOR CONTINUOUS RECOVERY OF SOLVENT

Hiroshi Nagai, Chofu, and Tsuneo Okamoto, Tokyo, both of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1979, Ser. No. 32,690
Claims priority, application Japan, May 2, 1978, 53-53175
Int. Cl.³ B01D *53/08*
U.S. Cl. 55—181 **4 Claims**



1. An apparatus for the continuous recovery of a solvent from a waste gas containing the solvent, which comprises:

a first adsorption unit including means for bringing waste gas into fluidized contact with activated carbon disposed within said first adsorption unit to permit solvent in said waste gas to be adsorbed on said activated carbon and means for discharging the remainder of said waste gas from said apparatus;

a water-desorption unit connected to said first adsorption unit to receive said activated carbon from said first adsorption unit;

a water condenser-separator;

first gas circulating means connecting said water condenser-separator to said water-desorption unit for circulating a non-condensable gas between said water-desorption unit and said water-condenser separator, said first gas circulating means being so arranged as to effect counterflow contact between said non-condensable gas and said activated carbon received by said water-desorption unit from said first absorption unit, whereby water desorbed from said activated carbon received by said water-desorption unit is entrained and removed by said non-condensable gas to said water condenser-separator to condense said water, the resultant water-free non-condensable gas being recirculated to said water-desorption unit;

a second adsorption unit connected to said water-desorption unit to receive said water-desorbed activated carbon from said water-desorption unit;

an activated carbon regeneration unit connected to said second adsorption unit to receive water-desorbed activated carbon from said second adsorption unit;

a regeneration gas condenser;

first gas transfer means connecting said second adsorption unit to said regeneration gas condenser whereby regenerating gas may be transferred from said regeneration gas condenser to said second adsorption unit; second gas

transfer means connecting said activated carbon regenerated unit to said regeneration gas condenser, whereby regeneration gas may be transferred to said condenser from said activated carbon regeneration unit,

said first gas transfer means being so arranged as to bring said regenerating gas into counterflow contact with said water-desorbed activated carbon received by said second adsorption unit from said water-desorption unit;

second gas circulating means connecting said second adsorption unit and said activated carbon unit for transferring said regenerating gas which has passed through said second adsorption unit to said activated carbon regeneration unit, said second gas circulation means being so arranged as to effect counterflow contact between said regenerating gas which has passed through said second absorption unit and said water-desorbed activated carbon received by said activated carbon regeneration unit from said second adsorption unit, whereby said solvent is desorbed from said activated carbon and entrained in said regenerating gas;

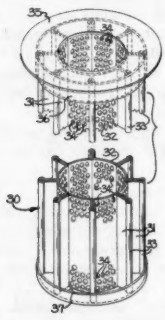
said second gas transfer means being so located as to effect transport of said generating gas with said entrained desorbed solvent to said regeneration gas condenser whereby substantially all of said entrained desorbed solvent is condensed, the remaining regenerating gas with any remaining solvent being recirculated through said first gas transfer means to said second adsorption unit, whereby said remaining solvent is adsorbed on said water-desorbed activated carbon received by said second adsorption unit from said water-desorption unit.

4,259,095

BAG-TYPE FILTER APPARATUS WITH COMBINATION BAG SUPPORT AND AIR DIFFUSER

Allen S. Johnson, Jr., P.O. Drawer 1037, Salisbury, N.C. 28144

Filed Sep. 26, 1979, Ser. No. 76,942
Int. Cl.[3] B01D *46/04*
U.S. Cl. 55—302 **10 Claims**



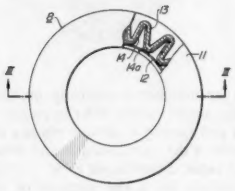
1. In a filter apparatus of the type wherein a particulate-laden gas is directed through a tubular filter bag for filtering and retaining the particulate material on the exterior of the filter bag, and wherein the filter bag is cleaned by a periodic reverse purge of air directed into one end of the filter bag, the combination therewith of means positioned within said filter bag and serving for supporting and holding the filter bag in an open tubular configuration and for also diffusing and distributing air throughout the filter bag when a periodic reverse purge of air is directed into the filter bag so as to thereby more effectively clean the filter bag while also reducing excessive flexing of the filter bag and abrasive wear thereof, said means comprising an elongate tube extending longitudinally within said filter bag, said tube having a series of spaced peripheral portions extending generally outwardly beyond other portions of the tube and serving for engaging the surrounding filter bag and holding the same in a generally open tubular configuration substantially out of contact with said other portions of the tube, and wherein said other portions of the tube have perforations therein located for diffusing and distributing air throughout the filter bag when a periodic reverse purge of air is directed into the tube.

4,259,096

FUEL VAPOR ADSORPTION TYPE AIR CLEANER ELEMENT FOR INTERNAL COMBUSTION ENGINE

Yasuhiko Nakamura, Toyohashi, and Yoshio Yamakawa, Toyota, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 17, 1979, Ser. No. 4,190
Claims priority, application Japan, Jan. 19, 1978, 53-4873
Int. Cl.[3] B01D *50/00*
U.S. Cl. 55—316 **4 Claims**



1. An annular fuel vapor adsorption air cleaner element for use with an internal combustion engine for cleaning air drawn into the combustion chamber or chambers of said internal combustion engine, said element comprising an intake air cleaning filter medium and a fuel vapor adsorption filter medium which contains activated carbon fibers for adsorbing fuel vapors, said air cleaning and vapor filter media being formed from non-woven fibrous webs and bonded together along predetermined portions into a unitary structure by a melted annular gauze mesh consisting essentially of a thermoplastic adhesive with said intake air cleaning filter medium being located outwardly from said fuel vapor a sorption filter medium and having a concentric relationship with each other, and the bonded portions lying between said filter media.

4,259,097

FILTERING MEANS FOR ARC SUPPRESSING GAS SYSTEM

Amrut R. Patel, Brandon, and Donald M. Hansen, Jackson, both of Miss., assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed Dec. 26, 1979, Ser. No. 107,056
Int. Cl.[3] B01D *50/00;* **F16K** *15/00, 17/04*
U.S. Cl. 55—316 **3 Claims**

1. In a system for pressurizing arc-quenching gas for an electrical current interrupter, a filtering assembly comprising:

a tubular casing having first and second portions, said first and second portions having distal ends having inlet and outlet conduits respectively coupled thereto and open, confronting ends;

a separable, rigid partition disposed transversely between said casing portions and receiving the open ends thereof in pressure-sealing relationship;

flange means coupled to said confronting ends of said filter casing portions;

tension means bridging said flange means for drawing said casing portions toward one another, and into pressure sealing contact with said partition;

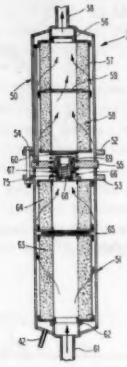
an oil filter means disposed in said first casing portion;

a desiccant filter means disposed in said second casing portion;

spring means disposed on either side of said partition for urging said oil filter and said desiccant filter against the distal ends of said first and second casing portions, respectively;

a sleeve projecting from one side of said partition;

check valve means disposed in said sleeve for maintaining a higher pressure in said second portion than in said first portion; and



a second flange means slidably disposed over said sleeve and receiving said spring means for urging one of said filters against the distal end of its respective filter casing portion.

4,259,098

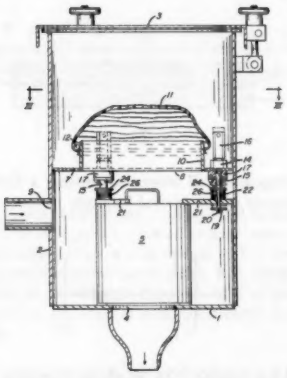
FILTERING APPARATUS WITH SEALING MEANS OPERATED FROM OUTSIDE THE FILTER CHAMBER

Charles A. Gunn, Gibsonia, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Jul. 14, 1980, Ser. No. 168,600

Int. Cl.³ B01D *46/00*

U.S. Cl. 55—478 **7 Claims**



1. Filtering apparatus comprising a filter housing having a bottom wall and a side wall extending upwardly therefrom, the bottom wall being provided with a flow opening and the top of the housing having an access opening, a cover normally closing said access opening, a partition wall in said housing and provided with a passage therethrough to permit filter means to be moved into and out of the chamber below the partition wall, the side of the housing being provided with a flow opening below the partition wall, filter means in said chamber engaging said bottom wall around the flow opening therein, the top of the filter means being spaced below said partition wall passage, the partition wall being provided around said passage with threaded holes, a shaft extending through each threaded hole and having a threaded portion screwed into said hole, the upper end of the shaft having a head for turning it and the lower end of the shaft having a foot beside the filter means, and a push bar having an outer end rotatably mounted on the lower end portion of the shaft adjacent said foot, the inner ends of the bars overlapping the top of the filter means, said shafts being provided with means for pressing said bars down against the filter means when the shafts are turned by their heads to move the shafts downwardly, and said shafts being rotatable by their heads in the opposite direction to release the pressure of the bars from the filter means and to swing them away from the filter means.

4,259,099

GAS FILTER DEVICE

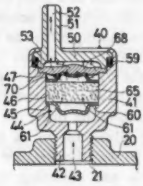
Tadashi Akabane, and Tooru Tamura, both of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 965,130, Nov. 30, 1978, abandoned. This application Apr. 24, 1980, Ser. No. 143,259

Claims priority, application Japan, Dec. 13, 1977, 52-167423[U]

Int. Cl.³ B01D *50/00*

U.S. Cl. 55—482 **3 Claims**



1. A gas filter device for filtering intake manifold gases supplied to a control device upon variations of the vacuum in the intake manifold, said filter device comprising:

a body member having a filtering chamber therein, said body member having an inlet port adapted to connect said chamber to an intake manifold and an outlet port adapted to connect said chamber to a control device;

a first filter element mounted in said chamber;

a second filter element mounted in said chamber between said outlet port and said first filter element;

retaining means located between said inlet port and said first filter element, said retaining means having multiple passageways; and

separating means mounted between said first filter element and said second filter element for keeping said second filter element away from said first filter element, said separating means comprising a hat-shaped disc provided with a plurality of minute passageways and having a raised central portion in contact with said second filter element and an annular peripheral portion in contact with said first filter element;

the outer periphery of said raised central portion of said hat-shaped disc being spaced inwardly from an inside wall of said chamber with only the outer periphery of said annular peripheral portion being in contact with an inside wall of said chamber.

4,259,100

DOUBLE CRUCIBLE SYSTEM FOR THE PRODUCTION OF LIGHT CONDUCTING FIBERS

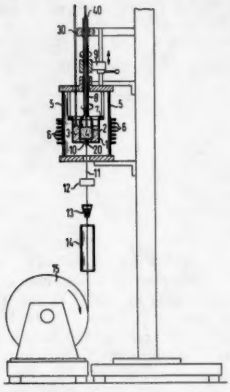
Hubert Aulich, Munich, and Josef Grabmaier, Kempfenhausen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Division of Ser. No. 852,236, Nov. 17, 1977, Pat. No. 4,118,212. This application Apr. 13, 1978, Ser. No. 895,981

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1976, 2654308

Int. Cl.[3] C03D *37/02*

U.S. Cl. 65—11 W **5 Claims**



1. A double crucible system having two concentric melting crucibles for the production of a light conducting fiber, comprising: an inner crucible means for accommodating a melt for a core of the light conducting fiber, an outer crucible means surrounding the inner crucible means for accommodating a melt for a casing of the light conducting fiber, the inner and outer crucible means having concentric nozzle means for drawing off a light conducting fiber, the inner crucible means being arranged to be adjustable in its height relative to the outer crucible means so that the distance between the concentric nozzles is variable and adjusting means being provided comprising a vertical tubular shaft connecting at a center of a top portion of the inner crucible means, guide means for slidably guiding the tubular shaft and said tubular shaft also having a glass supply inlet.

4,259,101

METHOD FOR PRODUCING OPTICAL FIBER PREFORM

Yasuo Tsukuda, Ome; Katsuyuki Imoto, Sayama; Kenzo Susa, Tokyo; Iwao Matsuyama, Sagamihara, and Tsuneo Suganuma, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 2, 1979, Ser. No. 17,025

Claims priority, application Japan, Mar. 3, 1978, 53-23486

Int. Cl.[3] C03C *25/02*; C03B *37/02*

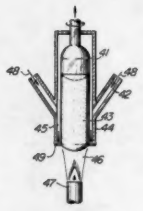
U.S. Cl. 65—18 **10 Claims**

1. A method for producing an optical fiber preform comprising the steps of:

blowing through at least one nozzle gaseous material which forms glass upon reaction to produce glass material soot by a CVD method which soot is deposited on a movable target to allow a soot rod to be formed thereon; and

heating and rendering transparent said soot rod produced in the first step; wherein the improvement comprises:

arranging a pipe substantially concentrically with the glass material soot so as to permit gas to flow through a clearance between the deposited glass material soot and the



inner wall surface of the pipe in a direction in which the soot rod grows in size.

4,259,102

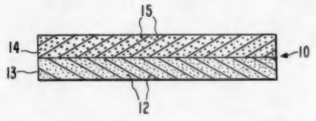
COMPOSITION COMPRISING USEFUL AGENT SUCH AS FERTILIZERS, HOUSED IN HETEROCYCLIC POLYMER

Nam S. Choi, Seoul, Rep. of Korea, assignor to ALZA Corporation, Palo Alto, Calif.

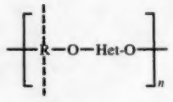
Division of Ser. No. 8,479, Feb. 2, 1979. This application Nov. 5, 1979, Ser. No. 90,931

Int. Cl.[3] C05C *9/00*

U.S. Cl. 71—28 **8 Claims**



4. A composition of matter comprising a fertilizer coated with a polymer of the general formula:



wherein R is a member from the group consisting essentially of a di, tri and tetravalent alkylene, alkenylene, cycloalkylene, cycloalkenylene and arylene; and Het is a heterocyclic five to eight membrane ring comprising (1) a carbon atom bivalently bonded to the oxygen atoms of the polymer (2) a hetero ring atom adjacent to the carbon atom of the polymer, said hetero atom a member selected from the group consisting of nitrogen, sulfur and oxygen; and (3) with the remainder of the ring independently selected from (a) and (b), wherein (a) is an alkylene bridge of 2 to 5 carbon atoms substituted with a ring forming member selected from the group consisting of nitrogen and sulfur; and (b) is an alkylene bridge of 3 to 6 carbon atoms when the hetero atom adjacent to the carbon atom in the polymer chain is a ring member selected from the group consisting of nitrogen and sulfur, and n is greater than 10.

4,259,103
METHOD OF REDUCING THE NUMBER OF MICROORGANISMS IN A MEDIA AND A METHOD OF PRESERVATION

James R. Malek, and John L. Speier, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 19,532, Mar. 12, 1979, abandoned. This application May 14, 1979, Ser. No. 38,997
Int. Cl.[3] A01N *9/20, 17/00;* A61K *9/00*
U.S. Cl. 71—67 26 Claims

1. A method of reducing the number of viable bacteria, fungi, algae and yeast in media by physically contacting the bacteria, fungi, algae and yeast with a surface which has been altered in a manner which comprises contacting a substrate, which develops a negative charge in water, with an amount effective to inhibit the growth of said microorganisms of a substance that ionizes in water to form cations and anions which substance is selected from the group consisting of sulfonium salts of the formula $R^8R^9R^{10}S^+X^-$, sulfonium salts of the formula

$$O\{SiC_dH_{2d}S^+X^-\}_2$$
$$(CH_3)_2 \quad (R^{11})_2$$

isothiuronium salts of the formula $RSC(NH_2)_2^+X^-$, isothiuronium salts of the formula

$$O\{SiC_dH_{2d}S^+C(NH_2)_2X^-\}_2$$
$$(CH_3)_2$$

phosphonium salts of the formula $R^4R^5R^6R^7P^+X^-$, and phosphonium salts of the formula

$$O\{SiC_dH_{2d}P^+X^-\}_2$$
$$(CH_3)_2 \quad (R^{12})_3$$

wherein R^8, R^9 and R^{10} are independently alkyl groups or aralkyl groups wherein there is a total of less than 30 carbon atoms in the molecule or a silylsubstituted alkyl radical of the formula

$$Y_aSiC_nH_{2n}—$$
$$Q_b$$

where Y is a hydrolyzable group, Q is an alkyl radical of 1 or 2 carbon atoms or $(CH_3)_3SiO$, a has an average value of 0–3, b has an average value of 0–3, n is an integer of 1 or greater and X^- is a water soluble monovalent anion, R is independently alkyl or aralkyl groups wherein there is a total of less than 20 carbon atoms in the molecule or a silylsubstituted alkyl radical of the formula

$$Y_aSiC_nH_{2n}—$$
$$Q_b$$

as defined above, R^4, R^5, R^6 and R^7 are as defined above for R^8, R^9 and R^{10}; R^{11} and R^{12} are independently alkyl groups or aralkyl groups wherein there is a total of less than 60 carbon atoms in the molecule and d is an integer of 1 or greater.

26. A method of reducing the number of viable bacterial, fungi, algae and yeast in media by physically contacting the bacteria, fungi, algae and yeast with a surface which has been altered in a manner which comprises contacting a substrate, which develops a negative charge in water, with an amount effective to inhibit the growth of said microorganism of a substance that ionizes in water to form cations and anions which substance consists of an organic amine of the formula

$$O[SiC_dH_{2d}NC_dH_{2d}NH_2]_2$$
$$(CH_3)_2 \quad H$$

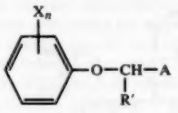
in which d in each case is an integer of 1 or greater.

4,259,104
HERBICIDAL AND PLANT-GROWTH-REGULATING 2-PHENOXYALKYL-OXADIAZOLES

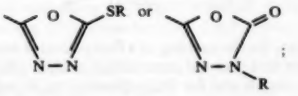
Laroy H. Edwards, Napa, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 2, 1979, Ser. No. 53,878
Int. Cl.[3] A01N *43/82;* C07D *271/10*
U.S. Cl. 71—92 10 Claims

1. A compound of the formula



wherein A is



X is the same or different group selected from bromo, chloro, fluoro, iodo or alkyl of 1 to 4 carbon atoms; n is 2 or 3; R and R′ are individually hydrogen or alkyl of 1 to 6 carbon atoms; with the proviso that when n=2 and neither X group is alkyl of 1 to 4 carbon atoms, the X groups are not at the and 2 and 5 positions of the phenyl ring.

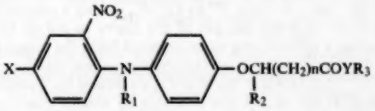
2. A method for retarding plant growth which comprises appling to said plants or their growth environment a plant-growth-retarding amount of the compound of the formula defined in claim 1.

4,259,105
DIPHENYLAMINE DERIVATIVES

Kuniyasu Maeda, Yokohama; Minoru Kaeriyama, Odawara; Nobuo Matsui, Odawara; Hisao Ishikawa, Odawara; Shozo Yamada, Hiratsuka, and Susumu Okunuki, Ohisomachi, all of Japan, assignors to Nippon Soda Company, Ltd., Ohtemachi, Japan

Filed Apr. 26, 1979, Ser. No. 33,682
Claims priority, application Japan, May 10, 1978, 53-54458; Sep. 13, 1978, 53-112630; Dec. 19, 1978, 53-157180
Int. Cl.[3] A01N *37/10;* C07C *79/46*
U.S. Cl. 71—108 14 Claims

1. A compound of the general formula



wherein
X is trifluoromethyl or halogen,
R_1 is hydrogen, lower alkyl, lower alkenyl or benzyl
R_2 is lower alkyl
R_3 is hydrogen, alkyl or alkali metal

Y is oxygen or sulfur
n is 0, 1 or 2.

7. A herbicidal composition, comprising an inert carrier and an effective amount of a compound of claim 1.

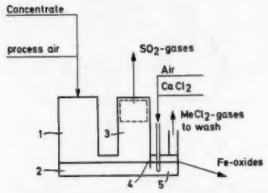
13. A method for the control of weeds, comprising applying to the locus to be protected an effective amount of a compound of claim 1.

4,259,106

PROCESS FOR THE ROASTING AND CHLORINATION OF FINELY-DIVIDED IRON ORES AND CONCENTRATES CONTAINING NON-FERROUS METALS

Olavi A. Aaltonen, and Juho K. Mäkinen, both of Pori, Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed May 4, 1979, Ser. No. 35,850
Claims priority, application Finland, May 11, 1978, 781493
Int. Cl.³ C22B *1/08*
U.S. Cl. 75—7 **7 Claims**



1. A process for the roasting of a finely-divided raw material selected from iron ores and concentrates or both which contain non-ferrous metals and for their chlorination, in order to vaporize the non-ferrous metals as metal chloride compounds, comprising oxidizing the finely-divided raw material at an elevated temperature to produce an oxide melt, and mixing a chlorinating reagent and an oxygen containing gas with the oxide melt in order to vaporize non-ferrous metal chlorides from the iron oxide melt.

4,259,107

RECOVERY OF GOLD FROM SEDIMENTARY GOLD-BEARING ORES

Wilbur J. Guay, Newtown, Conn., assignor to Newmont Exploration Limited, Conn.

Filed Dec. 13, 1979, Ser. No. 103,189
Int. Cl.³ C22B *11/08*
U.S. Cl. 75—105 **5 Claims**

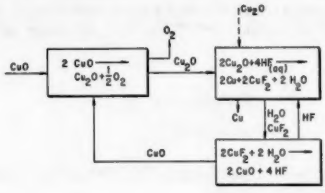
1. The method for treating sedimentary gold-bearing ore containing indigenous organic carbonaceous material and gold-bearing sulfides so as to increase the recoverability of its gold content by standard cyanidation extraction which comprises: slurrying the ore with water in the absence of extraneous alkaline material; adjusting the temperature of the slurry to about 167° to 212° F.; dispersing air or oxygen throughout the slurry at a rate and for a period of time such as the slurry will continue to absorb oxygen and the oxygen reacts with the organic carbonaceous and the sulfide content of the ore; maintaining the oxygenated slurry at a temperature of from about 167° to 212°F. for about 8 to 24 hours; adjusting the temperature of the slurry to about 75° to 125° F.; adding a mineral acid to the slurry to bring the pH of the slurry to 6.0 or lower; introducing a chlorinating agent selected from the group consisting of chlorine, alkali metal hypochlorites and alkaline earth metal hypochlorites into the slurry at a rate and for a period of time such as the slurry will continue to absorb chlorine or hypochlorite and terminating said addition when the slurry will absorb no more chlorine or hypochlorite as evidenced by the presence of excess chlorine or hypochlorite in the slurry; and maintaining the thus chlorinated slurry at a temperature within the range of about 70° to 125° F. for a period of about 6 to 12 hours with the resulting production of a slurry the solids content of which is amenable to a least 75 weight percent extraction of the gold component thereof by standard cyanidation practice.

4,259,108

THERMOCHEMICAL PROCESS FOR RECOVERING CU FROM CUO OR CUO_2

Donald M. Richardson, deceased, late of Oak Ridge, Tenn. (by Elizabeth B. Richardson, executrix), and Carlos E. Bamberger, Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 934,664, Aug. 17, 1978, Pat. No. 4,169,884.
This application May 31, 1979, Ser. No. 44,788
Int. Cl.³ C22B *15/00*
U.S. Cl. 75—117 **7 Claims**



1. A cyclic thermochemical process for recovering Cu from CuO or Cu_2O comprising the steps of

(a) in a heating zone, heating CuO to sufficient temperature to form Cu_2O and O_2.

(b) withdrawing the O_2 so formed from said zone as a gas stream,

(c) reacting Cu_2O with aqueous HF solution to form Cu and CuF_2,

(d) selectively recovering Cu formed in step (c),

(e) reacting CuF_2 with H_2O to form CuO and HF,

(f) recycling CuO from step (e) to step (a), and

(g) recycling HF from step (e) to step (c).

4,259,109

BERYLLIUM-CONTAINING IRON-BORON GLASSY MAGNETIC ALLOYS

Ryusuke Hasegawa, Morristown, N.J., assignor to Allied Chemical Corporation, Morristown, N.J.

Filed May 3, 1979, Ser. No. 35,873
Int. Cl.³ C22C *33/00*
U.S. Cl. 75—123 B **6 Claims**

1. A beryllium-substituted, iron-boron, primarily glassy magnetic alloy consisting essentially of about 6 to 12 atom percent boron, about 10 to 14 atom percent beryllium and about 80 to 85 atom percent iron plus incidental impurities, said alloy having a saturation magnetostriction less than about 20 parts per million.

4,259,110

PROCESS FOR STORING OF HYDROGEN AND THE USE THEREOF, PARTICULARLY IN ENGINES

Michel Pezat, Martillac, France; Abdelmalek Hbika, Meknes, Morocco; Bernard Darriet, Saucats, and Paul Hagenmuller, Taleuce, both of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France

Filed Jul. 9, 1979, Ser. No. 55,725
Claims priority, application France, Jul. 7, 1978, 78 20382
Int. Cl.³ C01B *1/32, 1/35*
U.S. Cl. 75—168 J **19 Claims**

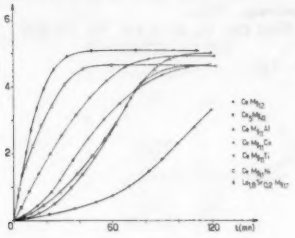
1. A process for storing hydrogen in metal hydrides comprising contacting the hydrogen with at least one alloy having the structure of formula I

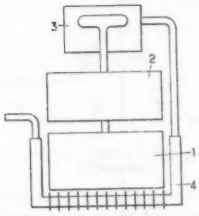
$$L_{a-ax}\,T_{ax}\,Mg_{b-by}\,M_{by} \quad (I)$$

wherein:

L is a member selected from the group consisting of a lanthanide element and an alloy of cerium with another lanthanide element, said alloy containing a major proportion of cerium,

T is an element selected from the group consisting of the metals of group II*a*,





M is an element selected from the group consisting of the transition metals, aluminum, silicon or tin,

x is a number between 0 and 1,

y is a number between 0 and 1,

a and b are indices corresponding to the stoichiometry of the elements of the alloy, b being different from 0 and by,

With the provisos that when x and y are equal to 0, a and b are respectively different from 1 and 1, 1 and 3, 2 and 17 and that when x is equal to 0 and that a and b are respectively equal to 1 and 2, or 1 and 3, or 2 and 17, M does not represent Ni.

4,259,111

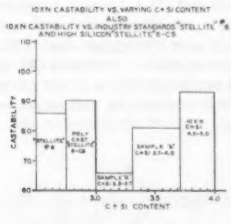
ALLOY FOR WELDING RODS AND THE LIKE

Dennis K. Kadau, Highland, and Stephen J. Barkovich, Canton, both of Mich., assignors to Poly Cast, Inc., Highland, Mich.

Filed Apr. 13, 1979, Ser. No. 29,677

Int. Cl.³ C22C *19/05*

U.S. Cl. 75—171 **8 Claims**



1. A low temperature, hard surfacing nickel based alloy, substantially free of cobalt, and tungsten, consisting essentially of about 1.8 to 2.5 percent by weight carbon, about 1.5 to 2.5 percent by weight silicon, about 29.0 to 31.0 percent by weight chromium, about 8.5 to 9.5 percent by weight molybdenum, and about 50 to 60 percent by weight nickel.

4,259,112

PROCESS FOR MANUFACTURE OF REINFORCED COMPOSITES

Joseph F. Dolowy, Jr.; Bradley A. Webb, and Edward C. Supan, all of Los Angeles, Calif., assignors to DWA Composite Specialties, Inc., Chatsworth, Calif.

Filed Apr. 5, 1979, Ser. No. 27,250

Int. Cl.³ B22F *3/22, 7/02*

U.S. Cl. 75—208 R **7 Claims**

1. A process for manufacturing a composite material comprised of a matrix material reinforced with uniformly and randomly distributed and randomly oriented fibers or particles of a dissimilar material comprising the steps of:

(a) mixing matrix material powder and reinforcing material fibers in a viscous solution of an organic, polymeric binder in a solvent to form a slurry, said solution having a viscosity sufficient to result in suspension of said matrix material powder and said reinforcing material fibers in uniform and random distribution and with random orientation in said slurry;

(b) pouring said slurry to form a plurality of sheets each sheet having a thickness between 0.005 inches and 0.100 inches;

(c) air drying said sheets;

(d) arranging said air-dried sheets into a stack;

(e) removing said binder and binder solvlent from said stack of air-dried sheets at temperature up to 800 degrees Fahrenheit and vacuum pressure down to at least 200 microns;

(f) bonding and consolidating said stack of air-dried sheets at a temperature in the range from below the initial melting point of said matrix material to just above the temperature for complete melting of said matrix material, and at pressure in the range from 100 psi to 3000 psi;

(g) cooling said bonded and consolidated stack of air-dried sheets to ambient temperature and depressurizing to ambient pressure.

4,259,113

COMPOSITION FOR SENSITIZING ARTICLES FOR METALLIZATION

Francis J. Nuzzi, Freeport; Edward J. Leech, Oyster Bay; Richard W. Charm, Huntington Station, and Joseph Polichette, South Farmingdale, all of N.Y., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Continuation of Ser. No. 690,060, May 26, 1976, abandoned, which is a continuation of Ser. No. 520,354, Nov. 1, 1974, abandoned, which is a continuation-in-part of Ser. No. 270,861, Jul. 11, 1972, abandoned, and Ser. No. 407,555, Oct. 18, 1973, abandoned. This application Feb. 21, 1978, Ser. No. 879,771

Int. Cl.³ C23C *3/00*

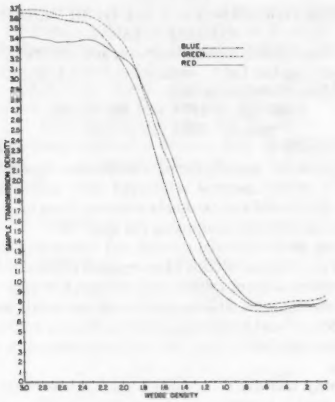
U.S. Cl. 106—1.11 **9 Claims**

1. A aqueous seeder solution for sensitizing a non-metallic surface to the electroless deposition of metal, comprising cuprous ion and cupric ion produced by mixing water, an acid, a halogen-containing compound, a cuprous compound and a cupric compound, wherein the weight ratio of cuprous ion to cupric ion is at least about 0.4 to 1, said seeder solution being capable of forming a water-insoluble derivative upon contacting with water, said water-insoluble derivative being adherent to said non-metallic surface.

4,259,114
METHOD FOR FORMING SILVER PRECIPITATING NUCLEI

Carl M. Berke, Boston, and Barbara A. Baughman, Cambridge, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 31, 1979, Ser. No. 108,355
Int. Cl.³ C23C 3/02
U.S. Cl. 106—1.28 **8 Claims**



1. A method for forming noble metal silver-precipitating nuclei which comprises reducing a noble metal salt or complex in the presence of a polymer with a metallic tin colloid produced by the reduction of a tin salt with borohydride in the presence of an organic solvent for the tin salt and a nitrogen-containing metal chelating polymer.

4,259,115
METHOD FOR FORMING SILVER PRECIPITATING NUCLEI

Raymond B. Hanselman, Concord; John J. Magenheimer, Wellesley, and Kenneth G. Scott, Sherborn, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

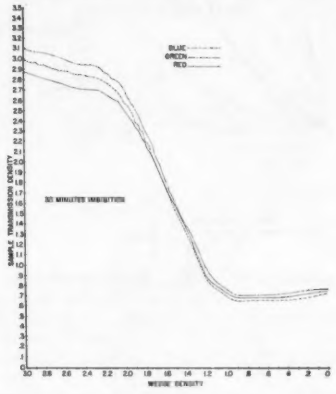
Filed Dec. 31, 1979, Ser. No. 108,455
Int. Cl.³ C23C 3/02
U.S. Cl. 106—1.28 **8 Claims**

1. A method for forming noble metal silver precipitating nuclei which comprises reducing a noble metal salt or complex in the presence of a polymer with an aqueous suspension of metallic tin produced by the reduction of a tin salt with borohydride.

4,259,116
METHOD FOR FORMING SILVER PRECIPITATING NUCLEI

Kenneth G. Scott, Sherborn, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 31, 1979, Ser. No. 108,456
Int. Cl.³ C23C 3/02
U.S. Cl. 106—1.28 **10 Claims**



1. A method for forming noble metal silver precipitating nuclei which comprises reducing a noble metal salt or complex in the presence of a polymer with a trivalent chromium ion/-metallic tin complex produced by reacting a chromic salt with metallic tin in aqueous medium.

4,259,117
DENTAL FILLING MATERIAL

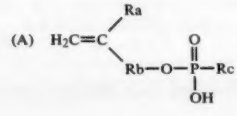
Junichi Yamauchi, Kurashiki; Eiichi Masuhara, Bunkyo-Ward; Nobuo Nakabayashi, Matsudo; Kyoichiro Shibatani, Kurashiki, and Tooru Wada, Takatsuki, all of Japan, assignors to Kuraray Co., Ltd., Okayama, Japan

Continuation of Ser. No. 778,734, Mar. 17, 1977, abandoned. This application Aug. 25, 1978, Ser. No. 936,759
Claims priority, application Japan, Mar. 17, 1976, 51/30045; Nov. 29, 1976, 51/143807; Nov. 30, 1976, 51/145049
Int. Cl.³ C09K 3/00
U.S. Cl. 106—35 **10 Claims**

1. A dental filling material of improved affinity for the tooth, consisting essentially of:

(1) an acrylic or methacrylic acid ester compound,

(2) a curing agent and (3) a dentally acceptable filler as a mixed material in combination with a phosphoric and/or phosphonic acid ester compound selected from the group consisting of compounds of formulas (A), (B), (C), (D), (E) and (F) in an amount of 2 to 50 weight percent based on said acrylic or methacrylic acid ester compound, said formulas being:



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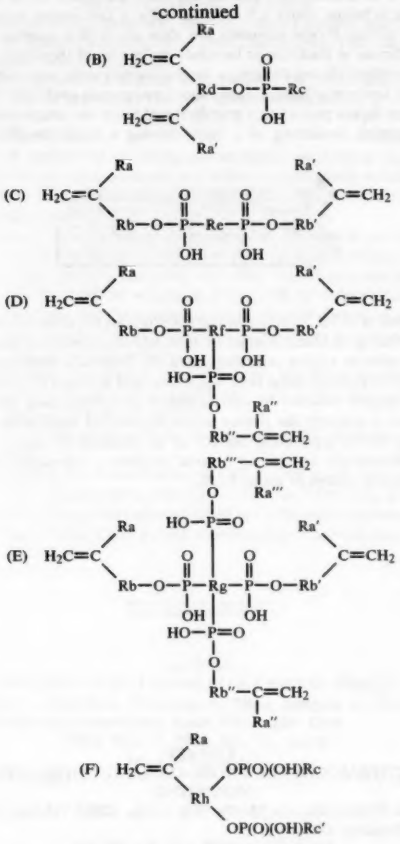
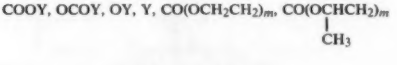
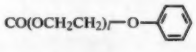


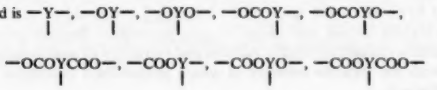
wherein Ra, Ra′, Ra″ and Ra‴ are hydrogen or methyl; Rb, Rb′, Rb″ and Rb‴ are



wherein m is an integer of 1 to 5 or



wherein l is an integer of 1 to 3; Y is a hydrocarbon residue containing 1 to 30 carbon atoms, which residue may be substituted by hydroxyl, alkoxy or halogen; Rc and Rc′ are X or OX where X is a hydrocarbon residue containing 1 to 30 carbon atoms, which may be substituted by hydroxyl, halogen, amino or carboxyl;



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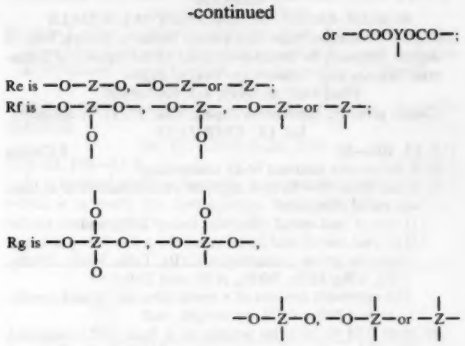
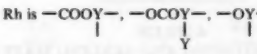


where Z has the same meaning as X, and



4,259,118

THERMALLY HIGH PRE-STRESSABLE GLASS WITH HIGH HOT STRESSING FACTORS

Werner Sack, Mainz, Fed. Rep. of Germany, assignor to Jenaer Glaswerk Schott & Gen., Mainz, Fed. Rep. of Germany

Continuation of Ser. No. 971,036, Dec. 19, 1978, abandoned. This application May 5, 1980, Ser. No. 146,318

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1977, 2756555

Int. Cl.[3] **C03C** *3/08*

U.S. Cl. 106—54 **4 Claims**

1. Thermally high prestressable glasses with high temperative shock resistance and thermal expansion coefficients in the temperature range 20°–300° C. of from 37.8 to 53.1×10^{-7}/°C., characterized in that the transformation temperatures (Tg) are from 571° to 608° C., the softening temperatures (Ew) are from 821° to 897° C., the working temperatures (V_A) are from 1211° to 1355° C., the temperature differential Ew–Tg is from 232 to 294° C., the thermal stress factor R is greater than 300 for undamaged glass surfaces under a quench blowing pressure of one bar and the ratio α'/α of the thermal expansion coefficient above Tg (α') to expansion below Tg (α) is from 4.6 to 9.4 whereby said glass exhibits a high compression prestressing and crumbles into small pieces upon forced fracture, wherein the composition of said glasses, in oxides percent by weight, consists essentially of:

SiO_2	73.40–79.50
B_2O_3	1.00–10.50
Al_2O_3	2.50–9.00
Na_2O	4.00–6.00
CaO	0–3.00
MgO	0–2.10
BaO	0–9.60
ZnO	0–5.10
total CaO + MgO + BaO + ZnO	3.20–13.50
ZrO_2	0–1.50
As_2O_3	0–0.50 and
NaCl	0–0.75.

4,259,119

BORIDE-BASED REFRACTORY MATERIALS

Tadahiko Watanabe, Saga, and Hiroki Shimizu, Okaya, both of Japan, assignors to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed Oct. 30, 1979, Ser. No. 89,487
Claims priority, application Japan, Mar. 27, 1979, 54-36398
Int. Cl.[3] C04B *35/58*
U.S. Cl. 106—55 5 Claims

1. A refractory sintered body comprising
(a) from 70 to 99.99% by weight of a combination of at least two metal diborides
(1) one of said metal diborides being TiB_2, and
(2) at least one of said other metal diborides being selected from the group consisting of CrB_2, TaB_2, MnB_2, MoB_2, YB_2, VB_2, HfB_2, NbB_2, AlB_2 and ZrB_2
the minimum amount of a metal diboride in said combination being 0.5% by weight, and
(b) from 0.01 to 30% by weight of at least one compound selected from the group consisting of NiB, Ni_4B_3, FeB and CoB,
said weight percentages being based on the weight of the sintered body.

4,259,120

COKE OVEN PATCHING AND SEALING MATERIAL

Roger L. Rueckl, Murrysville, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 930,442, Aug. 2, 1978. This application Jan. 14, 1980, Ser. No. 112,244
The portion of the term of this patent subsequent to Feb. 13, 1996, has been disclaimed.
Int. Cl.[3] C04B *35/04*
U.S. Cl. 106—58 9 Claims

1. A composition for the production of mixes useful for the patching and sealing of refractory structures which are subject to thermal cycling, such composition consisting essentially of, on a dry basis, the following components,
a. 55 to 80% of a high melting phase, selected from the group consisting of (i) silica, (ii) magnesia, (iii) alumina or (iv) combinations thereof,
b. 5 to 15% of a binder phase, and
c. 10 to 20% of a glass having a softening point between 900° and 1750° F.,
wherein at least 90% of said components are finer than 10 mesh.

4,259,121

METHOD OF PREPARING A NOVEL CEMENT PARTICULARLY SUITABLE AS A REFRACTORY CEMENT

Alain Mathieu, Montelimar, France, assignor to Lafarge Fondu International, Neuilly-sur-Seine, France

Filed Jan. 4, 1980, Ser. No. 109,481
Claims priority, application France, Jan. 5, 1979, 79 00213
Int. Cl.[3] C04B *7/32*
U.S. Cl. 106—104 7 Claims

1. A comminuted double clinker refractory cement comprising 10 to 30 parts by weight of a first clinker having the formula $(CaO)_4(Al_2O_3)_3(SO_3)$ and 70 to 90 parts by weight of a second clinker containing 30 to 75% of (CaO) (Al_2O_3).

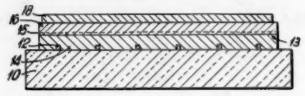
4,259,122

SELENIUM PHOTOVOLTAIC DEVICE

Paul E. Purwin, Watchung, and Robert F. Shaw, Chatham, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 967,626, Dec. 8, 1978, abandoned. This application Sep. 4, 1979, Ser. No. 72,405
Int. Cl.[3] H01L *31/04*
U.S. Cl. 136—258 16 Claims

1. A photovoltaic device comprising a transparent supportive substrate coated with an electrode comprising of a pellucid layer of conductive oxide having a surface whose work function is below about 4.5 electron volts, a continuous layer of crystalline P-type selenium less than about five microns but sufficient in thickness to be substantially free of shorting paths therethrough and forming a heterojunction with said oxide, a thin layer of tellurium interposed between said oxide and selenium layers providing a metallurgical bond therebetween; an electrode consisting of a metal having a work function in



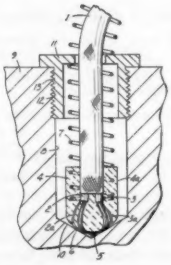
excess of about 5.0 electron volts contiguous the selenium layer providing an ohmic contact thereto, said selenium layer having a depletion region extending inwardly from said heterojunction in excess of about 1000 Angstroms and having a deficiency of oxygen relative to said selenium proximate said ohmic contact wherein the device when illuminated with solar energy or the equivalent thereof of an intensity of about 100 milliwatts per centimeter squared displays a conversion efficiency in excess of about 3.5%.

4,259,123

THERMOCOUPLE PROBE-CONSTRUCTION AND MOUNTING

John Tymkewicz, c/o Marlin Mfg. Corp., 12404 Triskett Rd., Cleveland, Ohio 44111

Filed Apr. 4, 1977, Ser. No. 784,529
Int. Cl.[3] H01J *35/28*
U.S. Cl. 136—221 7 Claims



1. In probe construction, in combination, a low mass contact member of insulating material, sensing means including conductors extending to positions near the surface of the member which contacts the surface of the member whose temperature is to be measured, said conductors being encapsulated at least partially therein, and means to apply pressure to the member to assure contact thereof at the free end extremity of said member with the separate member of which temperature indication is desired.

4,259,124

MODIFIED BRASS ALLOYS WITH IMPROVED STRESS RELAXATION RESISTANCE

Warren F. Smith, Branford; John M. Vitek, Cheshire, and Eugene Shapiro, Hamden, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 920,131, Jun. 28, 1978, Pat. No. 4,205,984.
This application Oct. 11, 1979, Ser. No. 84,003
Int. Cl.[3] C22F *1/08*
U.S. Cl. 148—2 7 Claims

1. A method for producing an essentially single-phase alpha alloy which is hot workable and which is particularly resistant to stress relaxation at elevated temperatures, said method comprising the steps of:

casting an alloy whose composition is selected to provide said hot workability and said resistance to stress relaxation at elevated temperatures, said alloy consisting essentially of 0.1 to 2.0% by weight tin, 0.1 to 2.0% by weight silicon, provided that the combined silicon plus tin content of said alloy is at least 0.3% by weight, 20 to 34% by weight zinc, and the balance copper;

hot working said alloy at a temperature above the recrystallization temperature of said alloy and below the solidus temperature of said alloy;

cold working said alloy to provide a 10 to 98% reduction in area;

annealing said worked alloy at 150° to 900° C. to recrystallize said alloy to a grain size of 0.005 to 0.050 mm; and

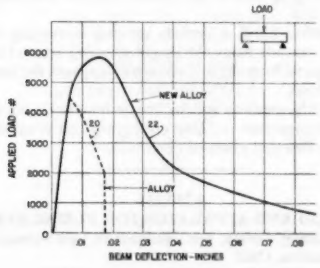
cold working being accomplished in cycles with said annealing provided that a cold working step is the last step of said cycles.

4,259,125

PROCESS FOR MAKING LOW CARBON FIBERS

Lloyd E. Hackman, Worthington, Ohio, assignor to Ribbon Technology Corporation, Canal Winchester, Ohio

Filed May 29, 1979, Ser. No. 43,126
Int. Cl.[3] C21D *8/00*
U.S. Cl. 148—3 4 Claims



3. In a melt extraction method for producing steel fibers, the steps of forming a pool of molten metal comprising essentially low carbon steel alloys having a carbon content less than approximately 0.25 percent by weight and a copper content greater than approximately 0.30 percent by weight, melt extracting fibers from said pool; cooling said fibers by passing the fibers produced from said pool through a first cooling zone which cools the fibers to a temperature no less than approximately 1,000 degrees F.; then removing said fibers from said first cooling zone while still at a temperature of 1,000 degrees F. or greater and then subjecting said fibers to a second cooling step at ambient room temperature until annealing of said fibers is substantially completed.

4,259,126

METHOD OF MAKING RAZOR BLADE STRIP FROM AUSTENITIC STEEL

William L. Cole, Camberley; Geoffrey Stott, Ruislip Manor, and Humphrey G. Bowden, Twickenham, all of England, assignors to Wilkinson Sword Limited, Buckinhamshire, England

Filed Sep. 14, 1979, Ser. No. 75,550
Claims priority, application United Kingdom, Oct. 19, 1978, 41160/78
Int. Cl.[3] C21D *1/20, 7/14*
U.S. Cl. 148—12 E 9 Claims

1. A method of manufacturing razor blade strip, to a state at which it is ready for cutting-edge formation, from an alloy whose composition is

Ni%	15 to 25
Cr%	3 to 8
Ti%	2 to 5
Al%	1 to 5

with the total of titanium plus aluminium being less than 9%, the balance being iron and impurities, the level of impurities being such that:

C%	less than 0.02
Mn%	less than 0.2
Si%	less than 0.2
N%	less than 0.02
P%	less than 0.02
S%	less than 0.02

comprising the steps of hot forging the alloy to bar, rolling the bar to strip, without prior cooling, maintaining the strip at elevated temperature to austenitise the structure, quenching the strip, descaling the strip, reducing the strip to final thickness, and finally subjecting the strip to hardening at a temperature of between 500° and 600° C. for not more than ten minutes.

4,259,127

METHOD OF WEATHER-PROOFING SURFACES PARTICULARLY CONCRETE ROOFS

Haim Schachter, Givataim, Israel, assignor to Tanis Ltd., Holon, Israel

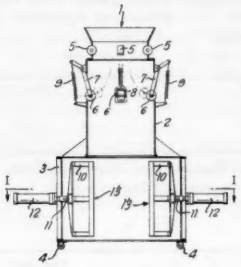
Filed Jan. 6, 1978, Ser. No. 867,395
Claims priority, application Israel, Oct. 23, 1977, 53251
Int. Cl.[3] C09J *3/30;* B32B *11/04, 13/04;* E04F *13/18*
U.S. Cl. 156—71 9 Claims

1. A method for weatherproofing a surface to provide a barrier which is substantially impermeable to water travelling inwardly but is permeable to moisture vapor travelling outwardly, which weatherproofing has sufficient tackiness so that it can be applied to surfaces of any slope without the need of mechanical fastening devices to prevent slippage, comprising: applying to the surface an inner weatherproofing layer of a cold coating mixture including a non-air-blown, steam-refined, soft asphalt having a softening point of 100°–140° F., reinforcing fibers, and a solvent to reduce the viscosity of the mixture to coatable consistency; and adhering to said inner layer an overlying felt layer.

4,259,128
COATING CARBON ELECTRODES

Helmut Jaunich; Dieter Dunkelmann, and Josef Schiffarth, all of Gelsenkirchener Str. 10, Postfach 224, D 428 Borken, Fed. Rep. of Germany

Division of Ser. No. 682,873, May 3, 1976, Pat. No. 4,070,228. This application Aug. 17, 1977, Ser. No. 825,362
Claims priority, application United Kingdom, May 1, 1975, 18255/75
Int. Cl.[3] B29C *17/04*
U.S. Cl. 156—94 5 Claims

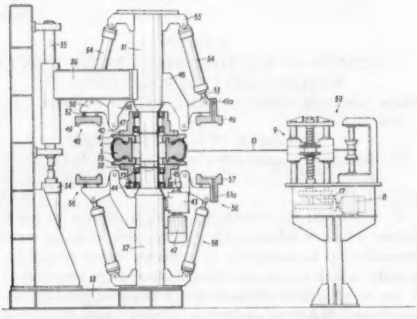


1. A method of prolonging the useful life of a partially consumed electric arc furnace electrode which comprises holding the electrode in a fixed position, carrying a first pair of preformed electrode protection sheets in diametrically opposed directions radially towards the major axis of the electrode and into contact with diametrically opposed surfaces of the electrode, pressing the sheets into contact with the electrode to adhere the sheets to the surface of the electrode and thereafter rolling the sheets down by rolling pressure applying means across the sheets in a direction parallel to the major axis of the electrode.

4,259,129
METHOD AND APPARATUS FOR MOLDING A TIRE WITH AN ANNULAR REINFORCEMENT BELOW THE TREAD SURFACE

Oskar Schmidt, Chicago 5, 2421 Kittsee/Bgld., Austria

Filed Oct. 16, 1978, Ser. No. 951,659
Claims priority, application Austria, May 3, 1978, 3234/78
Int. Cl.[3] B29H *17/04*
U.S. Cl. 156—125 7 Claims

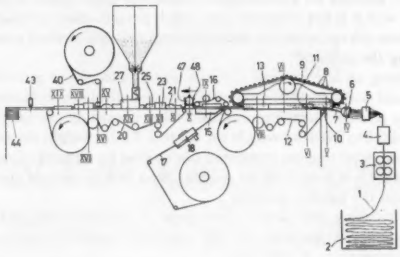


1. A method for producing a tire with a reinforcement below the tread surface of the tire, comprising the steps of molding a tire body about a core; subsequently winding a reinforcement in circumferential direction about the circumference of the tire body; and finally molding a further portion of the tire about the reinforcement to form the tread surface of the tire.

4,259,130
PRODUCTION OF ROD-SHAPE ELEMENTS

Jean-Pierre Lebet, Rue Colondalles 38, Montreux, Switzerland (CH-1820)

Filed Dec. 12, 1978, Ser. No. 968,833
Claims priority, application Switzerland, Dec. 15, 1977, 15432/77
Int. Cl.[3] B29H *9/02;* B32B *5/00;* A24C *1/32;* B31C *13/00*
U.S. Cl. 156—180 20 Claims



1. Process for the continuous manufacture of form-stable rod-shaped elements from interlocked and interbonded filamentary and/or fibrous filter material, wherein a continuous strand consisting of loose filamentary and/or fibrous filter material is passed to an endless continuously revolving conveying and forming belt, and is enveloped and brought into the desired cross-section by the said belt, and wherein, after achieving the desired strand cross-section, the strand material is interfixed, and the form-stable rod thus formed is divided into rod-shaped portions by a cutting device;

characterized in that the strand, consisting of loose filamentary and/or fibrous filter material, is formed into an extended rod-shaped element of interfixed filamentary and-/or fibrous filter material by being brought into engagement with, molded against and transported between;

on the one hand, the conveying and forming belt, which engages the outside of said strand along an extended length thereof to shape thereby at least a longitudinally-extending portion of the exterior of said rod-shaped element; and

on the other hand, a linearly moving conveying element which extends along the strand-gripping zone of the conveying and forming belt and which engages the interior of the strand;

said loose filamentary and/or fibrous material being brought into engagement with the conveying belt is substantially tensile free and crimped condition.

4,259,131
METHOD AND APPARATUS FOR FUSING STRIPS

Hubert Blessing, Dallas, Tex., assignor to Levi Strauss & Co., San Francisco, Calif.

Filed Sep. 28, 1979, Ser. No. 79,977
Int. Cl.[3] B31F *1/00;* B65C *9/25;* B32B *31/00, 3/04*
U.S. Cl. 156—201 5 Claims

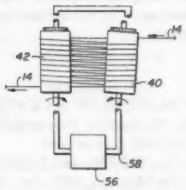
1. A method of fusing a first strip of material into a second strip of material whose melting point is lower than the scorching point of the first strip and wherein at least one of the two strips is continuous, comprising the steps of:

entwining the two strips together by folding the first strip in the direction of its width about the second strip to form a flat, combined strip with the second strip constituting a core,

entraining the combined strip on two side-by-side, diverging cylinders so that the combined strip describes a plurality of side-by-side figure eight patterns between the two cylinders,

heating the cylinders to the melting point of the second strip of material, and

rotating the cylinders to act as a windlass with respect to the



combined strip at a predetermined speed to ensure that the combined strip is drawn into tight contact with the cylinders for a predetermined period of time sufficient to complete the fusing process.

4,259,132

DEVICE FOR PRESSING LABELS OR FOILS ONTO OBJECTS

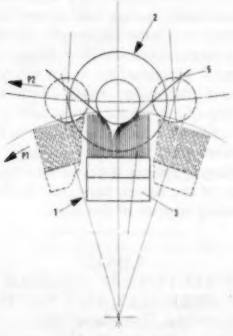
Egon Höveler, Haan, Fed. Rep. of Germany, assignor to Jagenberg-Werke Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Division of Ser. No. 850,107, Nov. 9, 1977, Pat. No. 4,200,483. This application Aug. 13, 1979, Ser. No. 65,829

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1976, 2651911

Int. Cl.³ B65C *3/18, 9/36*

U.S. Cl. 156—215 **3 Claims**



1. In a method for labeling objects having a noncylindrical portion and moveable in the straight or curved path, the improvement comprising: releasably positioning gummed labels or foils at the level of the noncylindrical portion; and applying the labels or foils, when released by the gripper elements, to the objects by providing at least one pressing element having a pliable pad disposed at the level of the noncylindrical portion which is to be provided with the label or foil with a plurality of elements disposed side by side, which independently of one another exert one of a point or line pressure during the applying action and advancing the at least one pressing element in synchronism with the objects along a path that is convexly curved with respect to the object path.

4,259,133

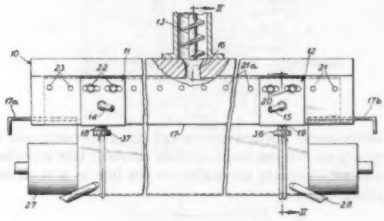
METHOD AND APPARATUS FOR MAKING PROFILE SHEETS

Seiichi Yagi, Kyoto, Japan, assignor to Minigrip, Inc., Orangeburg, N.Y.

Continuation-in-part of Ser. No. 340,830, Mar. 13, 1973, abandoned, and a continuation-in-part of Ser. No. 608,900, Aug. 29, 1975, abandoned. This application Aug. 16, 1976, Ser. No. 714,369

Int. Cl.³ B29D *7/02*

U.S. Cl. 156—244.11 **35 Claims**



1. A mechanism for continuously forming film with fastener profiles thereon comprising in combination:

film extruding means having a head with an elongate thin slot die opening for extruding a thin film for a bag body;

first and second profile preform extruding die blocks formed as separate elements from each other and separate from said head;

said die blocks having die openings shaped to form male and female releasably interlocking profile fastener elements, said die openings positioned so that the profile elements will engage the surface of the film while the film and profiles are still in a state of fusion and will fuse to each other;

each of said die blocks being selectively adjustably movably positionable relative to said head and to one another lengthwise along said slot die opening;

attaching means for separately connecting each of the preform die blocks to the film head and permitting adjustment of each of the preform die bocks independently of one another and relative to each other lengthwise along said slot die opening to vary the position of the preform die blocks in a direction across the width of the film surface so that the position of the profiles on the film can be changed relative to the longitudinal sides of the film respective to requirements of bags to be formed from the film;

a separate flexible supply tube connected to each of said die blocks for separately supplying each of said die blocks with fused plastic;

said tubes flexibly accommodating themselves to any adjusted position of the die blocks to which connected;

and means for cooling the film and profiles.

4,259,134

POLYMER FILM SLITTER-SEALER APPARATUS AND METHOD

Richard L. Joice, 23937 Hartland, Canoga Park, Calif. 91304, and Joseph C. Adamo, 9931 Lurline Ave., #130, Chatsworth, Calif. 91311

Filed Apr. 12, 1979, Ser. No. 29,442

Int. Cl.³ B32B *31/00;* **B65C** *9/25;* **B32B** *31/18*

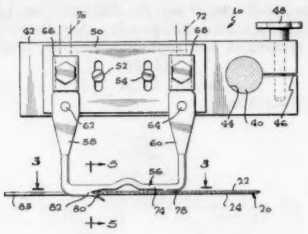
U.S. Cl. 156—251 **9 Claims**

8. The method of slitting and sealing of juxtaposed plural layers of thermoplastic polymer film comprising the steps of:

advancing a plurality of juxtaposed layers of thermoplastic synthetic polymer film to be slit and sealed along a slit-seal line;

disposing a heater bar having a preheater portion and a slitter-sealer portion on the line; and

heating the heater bar so that the preheater portion and the



slitter-sealer portion are heated simultaneously and commonly so that the thermoplastic polymer film is preheated and subsequently slit-sealed on the line as it is advanced along the line.

4,259,135

GLAZING TECHNIQUE

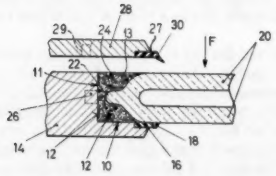
Josef Kulla, Witten, Fed. Rep. of Germany, assignor to BFG Glassgroup, Paris, France

Division of Ser. No. 842,607, Oct. 17, 1977, abandoned. This application Dec. 21, 1978, Ser. No. 971,699

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1976, 2648295

Int. Cl.[3] **B32B** *31/10, 3/06;* **E04B** *2/88*

U.S. Cl. 156—293 **5 Claims**



1. A method for glazing a window frame with a glass pane, said window frame having a groove of a depth substantially equal to the thickness of the window pane, comprising the steps of:

providing the pane-parallel wall of said groove with an elastically deformable, compressible, first sealing profile which projects from the groove, in a direction parallel to the pane;

inserting said glass pane into the window frame with said first sealing profile abutting said glass pane in the installation area of the pane;

filling the space remaining in said groove with a hardenable sealing mass;

covering said groove filled with said hardenable sealing mass with a glass pane retention strip which manifests a second elastically deformable, compressible sealing profile resting against the glass surface opposite the surface facing the groove wall, in the marginal region of the glass pane;

pressing said glass pane in a direction towards said pane-parallel wall, to bias and deform said first and second sealing profiles against said glass pane, providing a continuous seal;

subsequently hardening said sealing mass to maintain the sealing profile in a biased and deformed condition; and

removing the pressure from against said glass pane,

whereby the glass pane and first sealing means remain in a biased relationship as the glass pane is retained in the pressed position by the hardened sealing mass and the glass retaining strip is applied prior to said hardening of the sealing mass, the force pressing said glass pane against said groove wall provided with said first sealing profile is exerted on said glass pane retention strip, and the glass retention strip is cemented by said sealing mass subsequent to its hardening and is fixed with regard to its position.

4,259,136

METHOD OF MAKING OF A CENTRIFUGE SCREEN

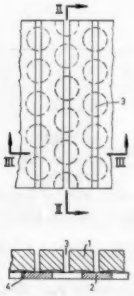
Leonhard Spiewok, Wallisellen, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland

Division of Ser. No. 922,550, Jul. 7, 1978, abandoned. This application Mar. 30, 1979, Ser. No. 25,499

Claims priority, application Switzerland, Jul. 22, 1977, 009104/77

Int. Cl.[3] **B29C** *19/00, 27/00;* **C09J** *7/00;* **B01D** *21/26;* **B29C** *24/16*

U.S. Cl. 156—293 **1 Claim**



1. A method of fabricating a screen for the drum of a centrifuge wherein the screen comprises a supporting frame, and a plurality of transversely spaced, hard screen bars which extend axially of the drum and serve to support material being centrifuged as that material moves axially through the drum, and wherein each bar is supported by, and is adhesively connected to, the frame over the entire length of the bar, the method including the step of joining the screen bars to the frame by a synthetic resin adhesive which originally is in the form of a foil interposed between the screen bars and the frame, but which, during the sticking operation, is drawn into the spaces between mating surfaces of the screen bars and the frame and leaves open the remaining regions of the frame.

4,259,137

JACKETING STEEL PIPES BY MEANS OF WRAPPING A RIBBON HELICALLY AROUND THE PIPES

Karl-Heinz Kemmerling, Moenchengladbach, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Dec. 31, 1979, Ser. No. 108,796

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1979, 2900597

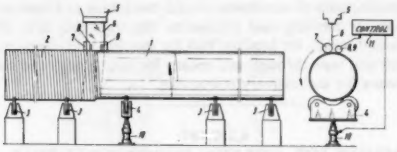
Int. Cl.[3] **G05C** *15/00*

U.S. Cl. 156—350 **2 Claims**

1. In an apparatus for jacketing pipes with thermoplastic ribbon, the ribbon being extruded and directed towards the pipe to be jacketed, the apparatus including roller track means, on which the pipes to be jacketed arrive in end-to-end relation and, also, causing the pipes to rotate for helically wrapping the extruded ribbon onto the pipe, the apparatus further including a pressure roll disposed above the pipes, to urge the ribbon onto the respective pipe, the improvement in the apparatus comprising:

a pair of axially spaced feelers for monitoring elevation differences of two pipes when passing the pressure roller;

a lifting means being included in the roller track means, for lifting a pipe or pipe end; and



control means connected to be operated by the pair of feelers, for operating the lifting means to cause two pipes to have their respective tops horizontally aligned as the end-to-end portions of the pipes pass the pressure roll so that during such passage the pressure roll urges the ribbon onto both pipes.

4,259,138

CORRECTION LABEL APPLYING DEVICE FOR A LABEL PRINTING MACHINE

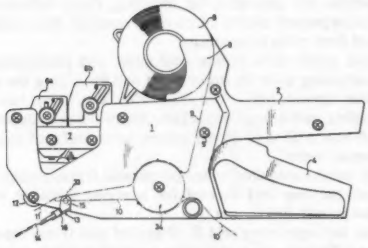
Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan

Filed Apr. 23, 1979, Ser. No. 32,378

Claims priority, application Japan, Apr. 27, 1978, 53/49286; Mar. 20, 1979, 54/59630

Int. Cl.³ B32B *31/00, 31/04;* **B65H** *9/16;* **B41F** *13/64*

U.S. Cl. 156—363 **19 Claims**



1. A correction label applying device for a label applying machine for applying a correction label to a price tag, or the like, said device comprising:

a label applying machine, said label applying machine comprising a label applying element and delivery means for delivering a label to said applying element;

said correction label applying device comprising:

a tag holder having a guide for receiving a tag;

an adjusting member supported adjacent to said tag holder and including a tag stopper connected thereto said support having index openings and corresponding extentions of said adjusting member engageable with said adjusting member, engageable with said openings; said tag stopper extending into said guide for blocking further insertion of a tag into said guide beyond said stopper;

said correction label applying device being connected to said label applying machine near said applying element, such that said guide holds a tag at said applying element for having a label applied to the tag.

4,259,139

METHOD AND APPARATUS FOR PRODUCING A REINFORCED PLASTIC PIPE

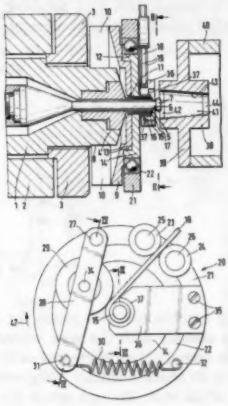
Eugen H. Stahl, Böttingen, Fed. Rep. of Germany, assignor to Hans Grobe GmbH & Co. KG, Fed. Rep. of Germany

Filed May 9, 1979, Ser. No. 37,375

Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820750

Int. Cl.³ B31C *81/00;* **B65N** *81/00;* **B29B** *7/14;* **B29C** *17/00*

U.S. Cl. 156—428 **15 Claims**



1. An apparatus for producing a reinforced plastic pipe of the type having a reinforcement spirally mounted on a tube comprising a tubular reinforcement coil mandrel, means for feeding a tube with an exterior contact surface in a direction axially through said mandrel, reinforcement strip supply means having a reinforcement strip with a strip contact surface, a rotatable disc mounted for rotation around said coil mandrel including directing means for directing the reinforcement strip around said tube into coils formed around said coil mandrel, movement means engageable with said coils as they are formed for moving said coils axially off said coil mandrel about the tube and in the direction of the movement of said tube, and a reducing sleeve mounted adjacent to said coil mandrel engageable with the coils moved off said coil mandrel to force them in a direction to move the strip contact surface into engagement with the tube contact surface and to cause the coils to be engaged with the tube, said reducing sleeve having an interior bore tapered inwardly in the direction of movement of said tube so as to deflect the coils inwardly into engagement with said tube.

4,259,140

PAPER WIRING APPARATUS

Duane E. Harrington, 365 Crestmont Dr., San Francisco, Calif. 94131

Filed Jun. 30, 1978, Ser. No. 921,103

Int. Cl.³ B32B *31/02*

U.S. Cl. 156—438 **7 Claims**

1. Apparatus for improved continuous attachment of a wire to a paper comprising:

a. an elongated support structure, having a first end and a second end;

b. means for rotatably supporting a supply of paper at said first end of said support structure;

c. means for rotatably supporting a supply of wire at said first end of said support structure;

d. a fabrication station located generally between said first end and said second end of said support structure, said station including a substantially flat bed across which the

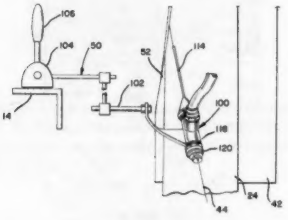
paper is transported, said bed having means for overlapping one edge of the paper over the wire;

e. guide means for guiding wire from the wire supply to said fabrication station;

f. guide means for guiding paper from the paper supply to said fabrication station;

g. adhesive supply means maintained under pressure for supplying liquid adhesive to said fabrication station;

h. means for applying adhesive to the wire at said fabrication station, said means including a discharge element through which wire is transported, said adhesive supply means being connected to said discharge element, said discharge



element being constructed with means for forcing liquid adhesive into contact with the wire wherein said liquid forcing means comprises an elongated orifice comprising a tube, having an inside diameter marginally larger than the diameter of the wire, through which the wire is transported wherein said elongated orifice communicates with said liquid supply and has a wall proximate to the transported wire;

i. means for coupling the wire to the paper at said fabrication station;

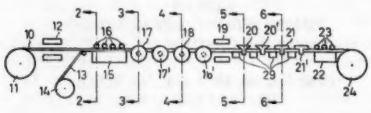
j. transport means at said second end engaging the coupled wire and paper for transporting the wire and paper across said fabrication station.

4,259,141

APPARATUS FOR APPLICATION OF A TAPE OF INSULATING MATERIAL IN THE LONGITUDINAL DIRECTION OF A SUBSTANTIALLY RECTANGULAR ELECTRICAL CONDUCTOR

Gunnar Andersson, and Gunnar Borgstrom, both of Vesteras, Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

Division of Ser. No. 789,836, Apr. 22, 1977, Pat. No. 4,159,920.
This application Aug. 28, 1978, Ser. No. 937,216
The portion of the term of this patent subsequent to Jul. 3, 1996, has been disclaimed.
Int. Cl.[3] H01B *13/00*
U.S. Cl. 156—438 **7 Claims**



1. Apparatus for application of a tape of insulating material provided with a heat-fixing binder to a substantially elongated rectangular electrical conductor in the longitudinal direction thereof by a series of successively positioned operating stations, comprising:

first means for heating said conductor;

means for contacting a portion of said tape with a first side of the conductor subsequent to the heating thereof to fix said tape portion to said conductor;

means for subsequently successively contacting in turn other portions of the tape with other respective sides of the conductor;

second means for heating said conductor and being located after said first means for contacting and before the last one of said means for subsequently successively contacting in the direction of movement of said conductor and tape; and

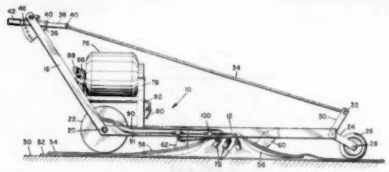
means for moving said conductor through said first and second means for heating, and for moving said conductor and said tape through said means for contacting, and said means for successively contacting.

4,259,142

MACHINE FOR APPLYING ROOFING MATERIAL

Dale T. Kortepeter, 2411 Flintwood, Rowland Heights, Calif. 91789

Filed Oct. 22, 1979, Ser. No. 87,076
Int. Cl.[3] B32B *31/26;* **B65H** *69/08*
U.S. Cl. 156—497 **9 Claims**



1. A machine for joining sheets of roofing material in overlapping relation comprising:

frame means;

first guide shoe means adjacent the front end of said frame means and depending therefrom, said first guide shoe means being contoured and configured for positioning between the sheets and for raising the upper one of said sheets;

gas burner means on said frame means in depending relation thereto and arranged for directing flame between the thus-separated sheets of roofing material rearwardly of said first guide shoe means;

second guide shoe means contoured and configured for positioning over the upper sheet and for urging the upper sheet against the lower sheet after the flame has been applied, said second guide shoe means being in depending relation with said frame means rearwardly of said gas burner means;

roller means rotatably mounted on said frame means adjacent the rear end thereof for applying pressure to the thus-joined sheets; and

means for supporting said front end of said frame means in spaced relation to said roofing material and for permitting movement of said machine while joining the sheets.

4,259,143

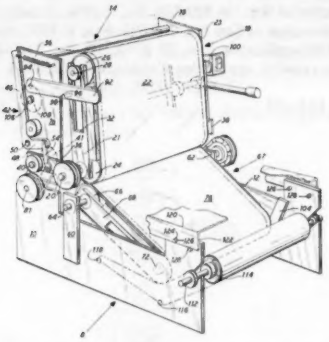
LAMINATING MACHINE

Joe D. Giulie, and Robert J. Reiss, both of Palo Alto, Calif., assignors to General Binding Corporation, Northbrook, Ill.

Filed Dec. 1, 1978, Ser. No. 965,518
Int. Cl.[3] B30B *5/06, 15/34*
U.S. Cl. 156—499 **11 Claims**

1. A laminating machine for use with prefabricated laminating packets formed of two leaves of film with heat activatable adhesive with a product to be laminated being insertable between the leaves, or for use with continuous webs of laminating film having a heat activatable adhesive thereon, comprising: first and second endless belts; heater means for transferring heat through at least one of the belts to the laminating packet or the webs of laminating film; guide means for guiding each belt in a loop pattern having a planar portion; in a first position for laminating packets the planar portions of the two loop patterns being plane parallel to one another and in contact to

form a carrying means for transporting the laminating packets adjacent the heater means for heating the heat activatable adhesive to seal the two leaves of film to the product to be laminated; and in a second position for laminating by continu-



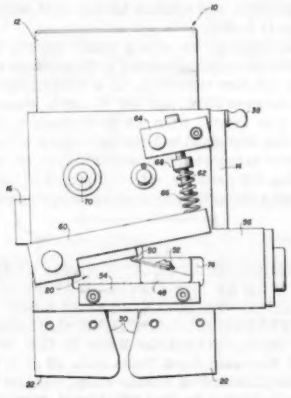
ous webs the planar portions of the two loop patterns forming an angle relative to one another with ends of the loop patterns in contact to form a laminating nip for the continuous webs with a product to be laminated therebetween.

4,259,144

BI-DIRECTIONAL TAPE APPLICATOR HEAD AND METHOD

Robert H. Ballentine, Ridley Park, Pa., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 10, 1978, Ser. No. 949,477
Int. Cl.[2] B32B *31/00*
U.S. Cl. 156—522 **30 Claims**



1. A tape applicator head for dispensing tape in two opposing directions while maintaining the orientation of the head unchanged, wherein the tape includes a backing strip and the tape applicator head comprises:

a housing through which a tape passenger is defined terminating in a tape dispensing outlet;

guide means mounted within the housing adjacent to the tape passage for guiding the backing strip from the tape as the tape passes through the tape passage to the tape dispensing outlet, and

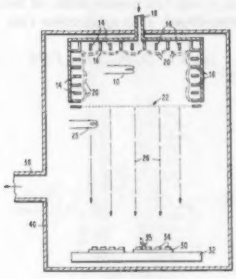
a pair of dispensing compactor surfaces mounted to the housing adjacent to each other at the dispensing outlet of the tape passage, the dispensing compactor surfaces having spaced, symmetrically oriented surfaces which laterally delimit the tape passage at the dispensing outlet and which alternately engage the tape during movement of the head in the two opposing directions, and impart to the tape a driving tension which draws the tape through the tape passage.

4,259,145

ION SOURCE FOR REACTIVE ION ETCHING

James M. E. Harper, Yorktown Heights, N.Y., and Harold R. Kaufman, Fort Collins, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,491
Int. Cl.[3] H05H *5/00*; H01L *21/306*
U.S. Cl. 156—643 **7 Claims**



1. A reactive ion beam etching process for forming a directed beam of controlled ions at low ion energies, comprising:

forming an ion plasma with an electron bombardment ion source having anode surfaces, a cathode and magnetic field producing means located around a plasma discharge chamber of said ion source,

using a single extraction grid having multiple apertures, said extraction grid being located at the end of said discharge chamber,

applying a voltage potential to said extraction grid which differs from the plasma potential by an amount substantially greater than the electron energy in the plasma and which causes said grid to accelerate the ions from said discharge plasma through said grid apertures into a directed ion beam of high current density at low ion energies, and

selecting an ion species that reacts chemically with the substrate material to thereby etch the substrate.

4,259,146

METHOD OF HEAT TREATING CHRYSOTILE ASBESTOS FIBRES

Roger W. Glass, Oakville, and Richard A. Kuntze, Mississauga, both of Canada, assignors to Ontario Research Foundation, Sheridan Park, Canada

Continuation of Ser. No. 865,410, Dec. 29, 1977, Pat. No. 4,192,707. This application Jul. 19, 1979, Ser. No. 58,794
Claims priority, application United Kingdom, Jan. 12, 1977, 1222/77
The portion of the term of this patent subsequent to Dec. 25, 1996, has been disclaimed.
Int. Cl.[3] D21B *1/02*
U.S. Cl. 162—3 **7 Claims**

1. A method for the formation from Group 4 or Group 5 chrysotile asbestos fibres of long, very straight, smooth-surfaced, hard asbestos fibres having enhanced impact strength in resin reinforcement, which comprises:

heat treating said chrysotile asbestos fibres and classifying said heat treated fibres to recover a coarse fraction constituting said hard asbestos fibres;

said heat treatment being effected by heating in an ambient

atmosphere having a substantially uniform temperature of about 400° to about 600° C. for a time from about 1 to about 5 hours sufficient to increase the impact strength of the coarse fraction of fibres in resin reinforcement and insufficient to result in a loss of water of crystallization of the fibres of greater than about 2% by weight of the total weight of water of crystallization.

4,259,147

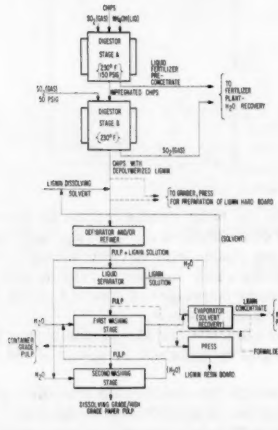
PULPING PROCESS

John Gordy, E. Richmond, Canada, assignor to New Fibers International, Nassau, The Bahamas

Continuation of Ser. No. 962,970, Nov. 22, 1978, abandoned, which is a continuation-in-part of Ser. No. 842,262, Oct. 14, 1977, abandoned, which is a continuation of Ser. No. 551,259, Feb. 20, 1975, abandoned. This application Oct. 11, 1979, Ser. No. 83,784

Int. Cl.[3] **D21C** *3/06, 3/26*

U.S. Cl. 162—12 **51 Claims**



1. A pollution-free process for producing wood pulp in any desired grade from any desired wood specie without the use of cooking liquors comprising the steps of:

providing a steam-jacketed digester vessel;

admitting chips of wood to said vessel;

impregnating said chips in said vessel with an aqueous ammonia solution and sulfur dioxide gas under a pressure of at least 150 p.s.i.g. while maintaining said chips under a vapor dome so that the liquid and gaseous reactants may circulate freely above, below, and on all sides of said chips at a temperature of at least 250° F. for an amount of time of up to about two hours effective to initiate a lignin depolymerizing reaction and form liquid and gaseous by-products;

separating said liquid and gaseous reactant by-products from said chips;

digesting said impregnated chips in sulfur dioxide gas, initially under a pressure of at least about 50 p.s.i.g., under a vapor dome so that the liquid and gaseous reactants may circulate freely above, below, and on all sides of said chips and maintaining said chips at a temperature of at least about 230° F. for an amount of time of up to about one hour effective to destroy at least a major portion of the lignin-cellulose bonds in said chips;

separating the gaseous contents of said vessel from said digested chips;

admixing said digested chips with a lignin solvent; and extracting lignin from said digested chips by agitating said chips and solvent in a defibrator to form a pulp slurry;

separating the lignin containing solution from said pulp.

4,259,148

PROCESS FOR MAKING REFINER MECHANICAL PULP

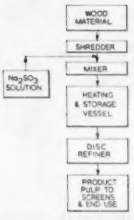
Laurence R. Beath, and Walter G. Mihelich, both of Kenogami, Canada, assignors to The Price Company Limited, Quebec, Canada

Continuation of Ser. No. 922,528, Jul. 7, 1978, abandoned, which is a continuation of Ser. No. 764,694, Feb. 1, 1977, abandoned. This application Jan. 30, 1980, Ser. No. 116,852

Claims priority, application Canada, Feb. 20, 1976, 246173

Int. Cl.[3] **D21C** *3/04*

U.S. Cl. 162—24 **30 Claims**



1. A process of making an improved refiner mechanical pulp from wood particles, said improved refiner mechanical pulp being capable of being used in competitive quality newsprint without the addition of chemical pulp, having a lower debris and shive content, a lower bulk, and a higher brightness, without the use of bleaching chemicals, than refiner mechanical pulp made by a conventional refiner mechanical pulping process, which comprises:

(a) wetting the surfaces of said particles by dipping them into or spraying onto said surfaces a solution of a sulphite salt of an alkali metal to add an amount of said alkali metal salt within the range of 1% to 10% of the oven dry weight of said particles, said solution having a pH within the range of 7 to 12.5; then

(b) steam heating, by adding steam directly thereto, the sulphite salt solution-bearing particles, after draining any excess solution therefrom, to a temperature within the range between 80° C. and 165° C. and holding the particles for a time varying from 0.5 to 80 minutes, said particles not being immersed in liquid subsequent to said draining and prior to completion of steam heating and holding; and

(c) passing the particles, after the period of steam heating, through a disc refiner to produce refiner mechanical pulp.

4,259,149

METHOD OF REDUCING WASTE STREAM POLLUTANTS BY THE CONTROL AND SEPARATION OF WASTE CONTAMINANTS FROM A MULTI-STAGE CELLULOSIC BLEACHING SEQUENCE

Daniel J. Jaszka, Tonawanda; Ralph J. Gall, Amherst, and Garry R. Roseman, North Tonawanda, all of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation of Ser. No. 902,470, May 3, 1978, abandoned, which is a continuation of Ser. No. 748,449, Dec. 8, 1976, abandoned, which is a continuation of Ser. No. 480,172, Jun. 17, 1974, abandoned. This application Sep. 27, 1979, Ser. No. 79,274

Int. Cl.[3] **D21C** *11/00*

U.S. Cl. 162—29 **8 Claims**

1. A method for reducing the waste stream pollutants from the aqueous waste effluent of a multi-stage cellulosic pulp bleaching process wherein the first stage consists essentially of D_c or D/C treatment, and the second stage consists essentially of E or O treatment, said method comprising the steps of:

(a) maintaining the ratio of ClO_2:Cl_2 in the first stage within a range of from about 65:35 to about 95:5 and the pH at less than about 3.5 to decrease the color, COD and BOD contaminants in the first stage effluent;

(b) maintaining the pH of the second stage effluent at from

about 8 to about 13 to decrease the inorganic chlorides in the second stage effluent;

(c) passing said first stage effluent through an activated resin bed to remove color, COD and BOD contaminants, said activated resin being selected from the group consisting of aromatic and aliphatic ion exchange resins, absorptive resins, highly crosslinked hydrophylic acrylic resins, phenol formaldehyde resins, and polyamide resins;

(d) intermittently passing at least some of said second stage effluent through said activated bed to elute color, COD and BOD contaminants; and

(e) treating said second stage effluent after elution to recover heat and caustic valves.

4,259,150

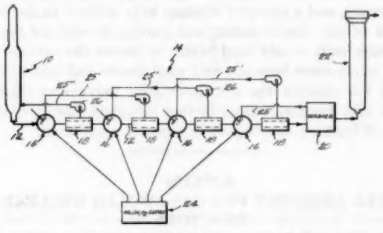
PLURAL STAGE MIXING AND THICKENING OXYGEN BLEACHING PROCESS

James R. Prough, Glens Falls, N.Y., assignor to Kamyr Inc., Glens Falls, N.Y.

Continuation of Ser. No. 970,852, Dec. 18, 1978, abandoned, which is a continuation of Ser. No. 785,786, Apr. 8, 1977, abandoned. This application Dec. 10, 1979, Ser. No. 101,565

Int. Cl.³ D21C *9/02, 9/10, 9/18*

U.S. Cl. 162—40 **3 Claims**



1. A method for treating cellulosic fiber material comprising the steps of

digesting the cellulosic fiber material by treatment with digesting liquid in a digester to produce digested pulp having a first consistency of about 8–15%;

oxygen bleaching the pulp by treating it at a plurality of different in-series zones, including a first zone, and a last zone, each zone including a mixing stage and a thickening stage;

mixing the pulp with O_2, and with water and NaOH, at each mixing stage to form an integral mixture of pulp with O_2 at a second consistency less than the first consistency, and then substantially immediately thickening the integral mixture at each thickening stage corresponding to each mixing stage to return the mixture to a consistency substantially the same as the first consistency by removing water therefrom;

after oxygen bleaching in the last zone, washing the oxygen bleached pulp at a washing zone;

supplying water for the last oxygen bleaching zone mixing stage from the washing zone; and

supplying water for each oxygen bleaching zone mixing stage preceding the last zone with water withdrawn from the next subsequent zone thickening stage.

4,259,151

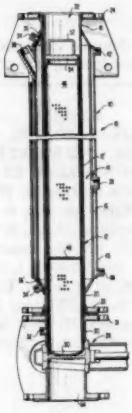
PULPING APPARATUS

John Gordy, Richmond, Canada, assignor to New Fibers International, Nassau, The Bahamas

Continuation of Ser. No. 962,971, Nov. 22, 1978, abandoned, which is a continuation-in-part of Ser. No. 959,620, Nov. 13, 1978, abandoned, which is a continuation of Ser. No. 821,468, Aug. 3, 1977, abandoned, which is a division of Ser. No. 551,259, Feb. 20, 1975, abandoned. This application Oct. 11, 1979, Ser. No. 83,785

Int. Cl.³ D21C *7/00*

U.S. Cl. 162—239 **21 Claims**



1. A pressurized vessel for digesting wood chips to destrcy lignin-cellulose bonds and depolymerize the lignin molecules therein comprising:

an elongated housing having means defining an inlet port and means defining an outlet port therein;

means defining a vapor jacket mounted on said housing and surrounding at least a portion thereof, said jacket having means defining inlet and outlet ports therein;

means mounted within said housing for confining a mass of wood chips within the portion of said housing surrounded by said jacket;

means communicating between the interior of said vapor jacket and the interior of said housing when liquid and gaseous reactants are admitted to said jacket for maintaining a mass of wood chips under a vapor dome when confined therein so that said reactants will permeate said mass of wood chips above, below, and on all sides thereof;

heating means mounted on said vessel for heating at least that portion of said housing which confines said mass of wood chips.

4,259,152

WELD FAILURE DETECTION

William E. Pennell, Unity Township, Westmoreland County, and Harry G. Sutton, Jr., Mt. Lebanon, both of Pa., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Nov. 30, 1978, Ser. No. 965,364

Int. Cl.³ G21C *17/00*

U.S. Cl. 176—19 LD **12 Claims**

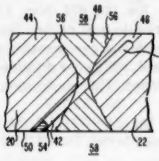
1. Apparatus for detecting development of a crack in a weld deposit joining a first structure to a second structure, comprising:

a. means for sealing a preselected tag gas in a selected portion of said weld deposit;

b. means for detecting said tag gas; and

c. means for directing a portion of the environment about said weld deposit to said detecting means;

whereby upon development of a crack in said selected portion of said weld deposit said tag gas is released to said



environment and directed from said environment to said detecting means, evidencing said crack.

4,259,153

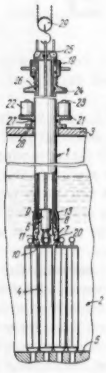
DEVICE FOR REMOVAL OF FUEL ASSEMBLIES AND CANS OF CONTROL AND SAFETY SYSTEM FROM CORE OF NUCLEAR REACTOR

Jury S. Pryamilov, ulitsa Shalyapina, 20, kv. 176; Nikolai A. Nikolaichev, ulitsa Krasnykh Zor, 6, kv. 16; Gennady V. Negin, ulitsa Berezovskaya, 73, kv. 5; Vsevolod Y. Duntsev, ulitsa Shalyapina, 15, kv. 81; Robert M. Krylov, ulitsa Shalyapina 8, kv. 11, and Vladimir I. Shiryaev, ulitsa Strazh Revoljutsii, 22, kv. 19, all of Gorky, U.S.S.R.

Continuation of Ser. No. 800,290, May 25, 1977, abandoned. This application Jan. 29, 1979, Ser. No. 7,194

Int. Cl.³ G21C *19/20*

U.S. Cl. 176—30 **5 Claims**



1. A device for removal of elements, namely, fuel assemblies and cans of a control and safety system, from a position within a core of a nuclear reactor, the elements having a first end forming a head and a second end opposite said first end, said device comprising: a hollow bar having a length longer than the length of an element to be removed, an open, core-facing end and an internal diameter sufficiently large that said hollow bar envelops said elements; means for moving said hollow bar into the core of the nuclear reactor; a main grip arranged in said hollow bar for axial movement relative to said bollow bar for gripping heads of elements to be removed; means for driving said main grip with respect to said hollow bar so that a gripped element is axially moved within said hollow bar; an auxiliary grip mounted on said core-facing end of said hollow bar for gripping a lowermost peripheral surface of said elements being removed; means for driving said auxiliary grip; said hollow bar being sufficiently long that the bar is movable into an extended position in which the bar substantially encompasses all of an element and has its core-facing end at the level of the second end of an element positioned within the core with said auxiliary grip reaching and gripping the peripheral surface at the second end of said element so that upward movement of said auxiliary grip frees a jammed element from the core without subjecting the element to tension forces, the other end of said bar being outside of the reactor.

4,259,154

NUCLEAR REACTOR CONTAINMENT STRUCTURE

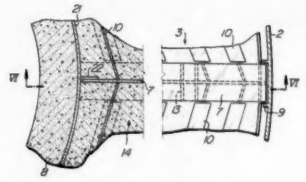
Tuyoshi Niino, and Yuichi Uchiyama, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 30, 1977, Ser. No. 829,243

Claims priority, application Japan, Sep. 3, 1976, 51/104903

Int. Cl.³ G21C *19/20*

U.S. Cl. 176—38 **15 Claims**



1. A nuclear reactor containment structure comprising a closure casing, a pedestal within said closure casing for supporting a pressure vessel, a diaphragm floor dividing said closure casing into a drywell and a pressure suppression chamber and supported at its inner peripheral end by said pedestal and at portions near the outer peripheral end of the floor by vertical columns, said outer peripheral end of the diaphragm floor being free from contact with the inner surface of said closure casing, said diaphragm floor including structural steel beams radially extending between said pedestal and said closure casing, and a plurality of shear keys secured to the inner surface of said closure casing and associated with the respective outer ends of said steel beams to permit the vertical and radial movements between said steel beams and said closure casing but restrain the circumferential movement therebetween, said diaphragm floor further including concrete layers disposed between the respective adjacent steel beams.

4,259,155

FUEL ASSEMBLY FOR GAS-COOLED NUCLEAR REACTORS

Martin Peehs, Bubenreuth, and Manfred Hünner, Erlangen, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Apr. 30, 1975, Ser. No. 573,072

Claims priority, application Fed. Rep. of Germany, May 15, 1974, 2423501

Int. Cl.³ G21C *3/02*

U.S. Cl. 176—78 **3 Claims**

1. A fuel assembly for gas-cooled nuclear reactors, comprising a plurality of fuel rods having metal cladding containing nuclear fuel, said cladding having outer metal surfaces, spacer grids having interspaced openings through which said rods are inserted and rigid elements extending from said grids and

having metal surfaces contacting the rods' said surfaces, in each instance one of said surfaces being roughened.

4,259,156

DEVICE FOR COUPLING PIPELINES IN REACTOR PRESSURE VESSELS, PREFERABLY THE PIPELINES OF THE FEEDWATER MANIFOLD

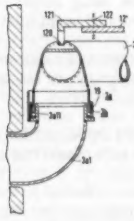
Walter Neuenfeldt, Schmitten; Milan Sulic, Seulberg, and Gerd Pollak, Kelsterbach, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Feb. 3, 1978, Ser. No. 874,897

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1977, 2705010

Int. Cl.³ G21C *3/02*

U.S. Cl. 176—87 8 Claims



1. In a device for couping pipelines in a pressure vessel of a nuclear reactor having a first piping section sealingly extending through the pressure vessel-housing wall and fastened thereto, and a second piping section sealingly connected to the first piping section, as well as a core container fastened within the pressure vessel, the core container having a cover, and steam separators forming, together with the core-container cover, a structural unit, the second piping section being also included with the core-container cover and with the steam separators fastened to the cover in the structural unit and, when the pressure vessel is opened, the second piping section together with the core-container cover being liftable out of the pressure vessel and being reinsertable into the pressure vessel; the first and the second piping sections being in mutual contact at coaxial sealing surface portions formed thereon at the sealed connecting location thereof, ball-cylinder seat means forming an axial slide fit for bringing said sealing surface portions of the first and second piping sections into said mutual contact, said sealing surface portions being placeable into a nominal location of sealing connection thereof through the weight per se of the structural unit of the core-container cover and the steam separators as well as through bracing forces for the core container cover, said bracing forces being oriented in axial direction of the pressure vessel, and resilient means foraffording relative motion, dependent upon thermal expansion, of said sealing surface portions within a predetermined tolerance range without impairing sealing action thereof.

4,259,157

METHOD OF PRODUCING ABRASION-PROOF COKE FORMS FROM BITUMINOUS COAL, BROWN COAL OR PEAT BRIQUETS

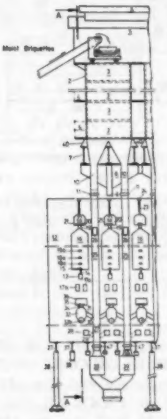
Kurt Lorenz, Hattingen; Horst Dungs, Herne; Hans B. Koenigs, Bergheim, and Roman Kurtz, Frechen, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG and Rheinische Braunkohlenwerke Aktiengesellschaft, both of, Fed. Rep. of Germany

Filed Apr. 17, 1979, Ser. No. 30,939

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818456

Int. Cl.³ C10B *39/00, 57/10, 47/20;* C10L *5/28*

U.S. Cl. 201—39 10 Claims



1. In a method of producing non-abrasive coke forms of briquets from bituminous coal, brown coal or peat in at least three separate stages in which the briquettes are preheated, dehydrated or dried, carbonized and subsequently cooled, the improvement wherein the steps of preheating and dehydrating comprises exposing the briquets to a unilateral heat source in indirect heat transfer therewith thereby forming a unilateral temperature gradient in the briquets.

4,259,158

APPARATUS FOR PRODUCING ABRASION RESISTANT COKE FROM BROWN COAL BRIQUETS

Heinrich Weber, Recklinghausen; Kurt Lorenz, Hattingen; Horst Dungs, Herne; Roman Kurtz, and Hans-Joachim Kerstng, both of Frechen, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG and Rheinische Braunkohlenwerke AG, both of, Fed. Rep. of Germany

Division of Ser. No. 18,870, Mar. 9, 1979. This application Jul. 30, 1979, Ser. No. 61,917

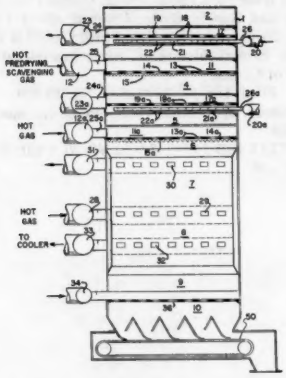
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2812005

Int. Cl.³ C10B *1/04*

U.S. Cl. 202—121 6 Claims

1. In a device for producing abrasion resistant coke from brown coal briquettes of the type having a shaft furnace divided vertically in successive stages in which the brown coal briquettes are passed through preheating, drying, carbonizing and cooling stages, and respective hot gas inlets and outlets communicating with each of the preheating, drying and carbonizing stages, the improvement comprising at least one gas suction arm traversing said furnace at each of the preheating and drying stages operatively connected for fluid communication to the respective outlet thereof for drawing gas from said furnace, said gas suction arm having a tubular upper wall portion connected to a perforated bottom wall portion, side

wall portions depending from said tubular upper wall portion at opposite sides of said bottom wall portion and extending below said bottom wall portion, and extending below said



bottom wall portion, and means disposed below said bottom wall portion intermediate said side wall portions for passing the hot gas into said suction arm.

4,259,159

METHOD AND APPARATUS FOR SEALING THE CHAMBERS OF COKE OVENS

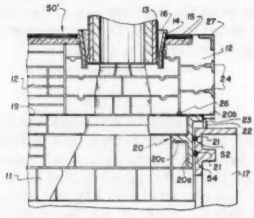
Dieter Hohler, Recklinghausen, Fed. Rep. of Germany, assignor to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Filed Feb. 25, 1980, Ser. No. 124,088

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1979, 2908839

Int. Cl.[3] **C10B** *29/06*

U.S. Cl. 202—269 **9 Claims**



1. A device for sealing the chambers of coke ovens adjacent the roof of the ovens and above an oven door frame at the transition between fireclay brickwork and silica brickwork, each having joints between courses and with the door frame including an upper horizontal part and a vertical back part and which is located between buckstays supporting the side of the door frame, comprising a cast iron bridge extending horizontally between the buckstays and including a central vertical part disposed behind the vertical edge of the door frame and extending above the horizontal edge of the door frame and including an upper horizontal part connected to the central part and extending outwardly from one side thereof and underlying and supporting the fireclay brickwork above the transition of the fireclay brickwork and the silica brickwork and having a lower horizontal part extending outwardly from the side thereof having a lower horizontal extending part engaging into the silica brickwork between the joints thereof.

4,259,160

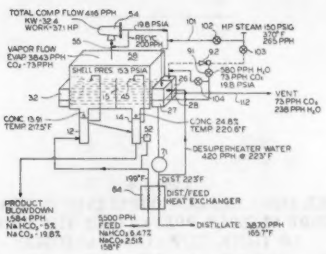
VAPOR COMPRESSION DISTILLER AND METHOD

Thomas W. McClure, Brookfield, Wis., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Filed Aug. 4, 1978, Ser. No. 930,937

Int. Cl.[3] **C02F** *1/12;* **B01D** *1/28*

U.S. Cl. 203—1 **19 Claims**



1. A vapor compression distiller system including a vessel,

heat exchange tube means disposed within said vessel and including first and second groups of heat exchange tubes, the tubes of each group including inlet and exit ends,

said vessel including a liquid collector,

liquid distributing means disposed in said vessel and connected to said liquid collector for circulating liquid from said liquid collector over said heat exchange tubes whereby a portion thereof is evaporated,

said liquid collector being constructed and arranged for receiving unevaporated liquid from said liquid distributing means,

feed liquid delivery means for delivering feed liquid to said system and discharge means for discharging concentrate from said liquid collector,

vapor compression means connected to said vessel for receiving evaporated liquid and for delivering compressed vapor to the inlet ends of said first group of heat exchange tubes,

steam ejector means connected to the exit ends of said first group of heat exchange tubes for receiving the uncondensed vapor and non-condensable gases therefrom, said steam ejector means also being connected to a high pressure steam source for elevating the pressure of said vapor, said steam ejector means also being connected to the inlet ends of said second group of heat exchange tubes for delivering vapor at an elevated pressure thereto.

4,259,161

PROCESS FOR PRODUCING ALUMINUM AND ELECTRODES FOR BIPOLAR CELL

Subodh K. Das, Apollo, and Robert L. Coffman, Lower Burrell, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 26, 1979, Ser. No. 97,437

Int. Cl.[3] **C25C** *3/06, 7/02*

U.S. Cl. 204—67 **12 Claims**

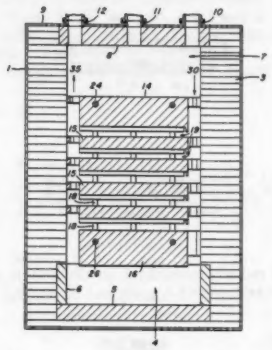
1. A method for producing aluminum in an electrolytic cell containing aluminum chloride dissolved in a molten solvent of higher decomposition potential, the cell having a terminal anode, a terminal cathode and at least one bipolar electrode arranged to operate with the anode and the cathode providing inter-electrode spaces therebetween, the process which comprises the steps of:

(a) providing at least one bipolar electrode comprised of carbonaceous material;

(b) treating one surface of the electrode with a source of aluminum to provide an adherent layer of aluminum carbide thereon;

(c) arranging the electrode in the cell so that the treated

surface functions as a cathode on passage of electrolyzing current; and



(d) thereafter electrolyzing the cell, thereby producing chlorine on each anode surface and aluminum on each cathode surface, the aluminum being swept from the cathode surface by bath material.

4,259,162

FAMILY OF COMPOUNDS CROSSLINKABLE BY PHOTON IRRADIATION

Armand Eranian; Jean-Claude Dubois; Maryse Gazard, and Francoise Barre, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 28, 1978, Ser. No. 882,169

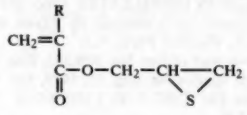
Claims priority, application France, Mar. 4, 1977, 77 06441

Int. Cl.³ C08F *8/00, 8/34;* C08J *3/24*

U.S. Cl. 204—159.16 **4 Claims**

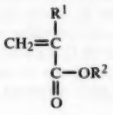
1. A copolymer composition crosslinkable by ultraviolet light rays into a 3-dimensional network, said composition comprising, as the crosslinkable monomers:

(i) from 40 to 80% by weight of 2,3 epithiopropyl alkyl acrylate monomer units of the formula



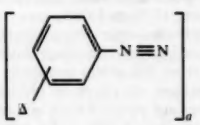
wherein R is hydrogen or a C_1 to C_4 alkyl; and

(ii) from 60 to 20% by weight of vinyl monomer units of the formula:

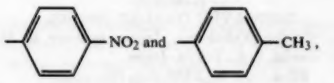


wherein R^1 is hydrogen or an alkyl group of the formula C_nH_{2n+1}, wherein n is an integer from 1 to 10 and R^2 is a C_1 to C_5 alkyl group, together with

(iii) an ultraviolet initiating amount of an aryl diazonium salt of the formula:



wherein a and b are integers from 1 to 5 and Δ is selected from the group consisting of —OH,—NH_2,—CHO,—OCH_3—NO_2,



M is Fe, Sn, Sb, Bi, B, P or As, and X is halogen.

4,259,163

PROCESS FOR APPLYING ANTICORROSIVE COATING ONTO AUTOMOBILE BODY

Tameyuki Suzuki, Zushi; Yoshio Shirakashi, Narashino; Nobukazu Tsutsui, Kawanishi; Sadao Yamamoto, Funabashi; Akira Kubo, Sakura; Yasuhiko Teshima, Yachiyo, and Nobuo Kuranami, Narashino, all of Japan, assignors to Shinto Paint Co., Ltd., Amagasaki, Japan

Filed May 8, 1979, Ser. No. 37,149

Claims priority, application Japan, May 11, 1978, 53-56012; May 11, 1978, 53-56013; Jun. 27, 1978, 53-77798

Int. Cl.³ C25D *13/06*

U.S. Cl. 204—181 T **1 Claim**

1. A process for applying an anticorrosive coating on an automobile body member which comprises subjecting the lower portion of the body member to a first electrodeposition in an aqueous bath containing (a) a cationic resinous binder and (b) a synthetic resin in the form of fine powder, which is solid at room temperature but can melt at an elevated temperature, the weight ratio of (a)/(b) being 1/0.5–5, by applying a voltage between the said body member as the cathode immersed at its lower portion in the electrodeposition bath and a counter-electrode as the anode in said bath, while withdrawing the said body member upwardly out of said electrodeposition bath, and then subjecting the whole body member without hardening the first deposited film to a second electrodeposition in an aqueous bath containing an anionic or cationic resin, washing the thus treated article with water and baking the same to effect hardening of the coating.

4,259,164

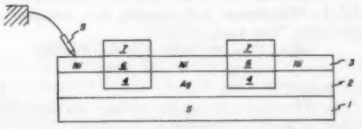
SILVER/SILVER HALIDE ELECTRODES COMPRISING CHROMIUM OR NICKEL

Arthur A. Rasch, and Roger Searle, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 13, 1979, Ser. No. 66,123

Int. Cl.³ G01N *27/26*

U.S. Cl. 204—195 F **18 Claims**



1. A silver/silver halide electrode comprising a support containing a layer of silver, portions of said layer of silver having thereon a layer of a metal selected from the group

consisting of nickel and chromium and mixtures and alloys of nickel and chromium, the portions of silver not covered with metal having thereon a layer of silver halide.

10. An ion-selective electrode comprising a support having thereon a silver layer, portions of said silver layer having thereon a metal selected from the group consisting of chromium and nickel and mixtures or alloys of chromium and nickel, the portions of silver not covered with said metal having thereon a first layer of silver halide and a second layer comprising a metal salt and a third layer comprising a membrane comprising an ionophore, a carrier solvent and a hydrophobic binder.

4,259,165

DISSOLVED OXYGEN PROBE

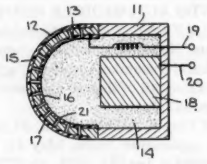
Yoshihiro Miyake, Yokohama, Japan, assignor to Hokushin Electric Works, Ltd., Tokyo, Japan

Filed Dec. 10, 1979, Ser. No. 102,148

Claims priority, application Japan, Dec. 20, 1978, 53-177918[U]

Int. Cl.[3] **G01N** *27/46*

U.S. Cl. 204—195 P **5 Claims**



1. A galvanic cell probe submersible in a liquid to continuously analyze the concentration of a gas, such as oxygen, dissolved therein, said probe comprising:

A a casing having an open mouth covered by a gas permeable membrane to define a chamber filled with an electrolyte;

B a measuring electrode disposed in said chamber with its front face closely adjacent the inner surface of the membrane to create a gap that is occupied by the electrolyte, said measuring electrode having holes therein to form an electrolyte passage between the front face and the rear face of the electrode, said rear face having an insulating layer thereon to prevent a reaction between the rear face and the electrolyte whereby the probe is rendered substantially insensitive to dissolved gas contained in the electrolyte and responds only to dissolved gas contained in the liquid being analyzed, said insulating layer having holes therein all of which being in registration with all of the holes in the measuring electrode on a one-to-one basis; and

C a counter-electrode disposed in said chamber whereby the current passing between the measuring electrode and the counter-electrode through said electrolyte as a result of galvanic action is a function of the concentration of dissolved gas in said liquid.

4,259,166

SHIELD FOR PLATING SUBSTRATE

Marshal L. Whitehurst, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

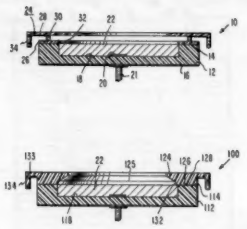
Filed Mar. 31, 1980, Ser. No. 136,032

Int. Cl.[3] **C25D** *17/00*

U.S. Cl. 204—279 **8 Claims**

1. A shield for use in plating the surface of a substrate having a flat circular surface comprising,

a body having a bottom surface, a top surface and a circular opening therethrough, the diameter of the opening at the bottom surface being approximately equal to the diameter of the surface of the substrate, the diameter of the opening at the top surface being smaller than the diameter at the bottom surface, and the inner surface of the opening being



beveled radially inwardly from the bottom surface at an angle of between 45 degrees and 60 degrees.

4,259,167

FORMATION OF CAKING COALS

Ronald Liotta, Clark, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 969,353, Dec. 14, 1978, abandoned. This application Aug. 23, 1979, Ser. No. 69,059

Int. Cl.[3] **C10G** *1/00, 1/06;* **C10B** *57/04;* **C10L** *0/00*

U.S. Cl. 208—8 LE **25 Claims**

1. A method for forming coal products having improved properties upon pyrolysis, by oxygen-alkylation and/or oxygen-acylation, which method comprises: (a) treating the coal with a solution comprising:

(aa) at least one quaternary base represented by the formula R_4QOR'' were each R is the same or different group selected from the group consisting of C_1 to about C_{20} alkyl and C_6 to about C_{20} aryl; Q is nitrogen or phosphorus; and R'' is selected from the group consisting of hydrogen, C_1 to about C_{10} alkyl, aryl, alkylaryl, arylalkyl and acetyl; and

(ab) at least one compound represented by the formula R'X where R' is a C_1 to C_{20} alkyl or acyl group and X is selected from the group consisting of halides, sulfates, bisulfates, acetates and stearates; wherein X is attached to a primary or secondary carbon atom; and

(b) pyrolyzing the treated coal.

4,259,168

TREATMENT OF COAL TO INCREASE YIELDS AND IMPROVE PHYSICAL CHARACTERISTICS OF COAL LIQUEFACTION DISTILLATES AND BOTTOMS

Ronald Liotta, Clark, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 969,352, Dec. 14, 1978, abandoned. This application Aug. 23, 1979, Ser. No. 69,064

Int. Cl.[3] **C10G** *1/00;* **C10B** *57/04*

U.S. Cl. 208—8 LE **22 Claims**

1. A method for improving the reactivity of coal and enhancing the yield and product quality upon liquefaction by oxygen-alkylation or oxygen-acylation, which method comprises: (a) contacting the coal with a solution comprising:

(aa) at least one quaternary base represented by the formula R_4QOR'' where each R is the same or different group selected from the group consisting of C_1 to about C_{20} alkyl and C_6 to about C_{20} aryl; Q is nitrogen or phosphorus; and R'' is selected from the group consisting of hydrogen, C_1 to about C_{10}, alkyl, aryl, alkylaryl, arylalkyl and acetyl; and

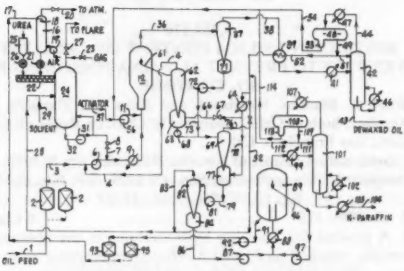
(ab) at least one compound represented by the formula R'X where R' is a C_1 to C_{20} alkyl or acyl group and X is selected from the group consisting of halides, sulfates, bisulfates, acetates and stearates; wherein C is attached to a primary or secondary carbon atom; and

(b) subjecting the contacted coal to a liquefaction process.

4,259,169
PROCESS FOR THE SEPARATION OF N-PARAFFINS FROM HYDROCARBON OILS

Sidney T. G. Gale, Awali, Bahrain, and Paula J. J. Spreutels, Ghent, Belgium, assignors to s.a. Texaco Belgium n.v., Brussels, Belgium

Filed May 25, 1979, Ser. No. 42,665
Int. Cl.³ C10G *73/24*
U.S. Cl. 208—25 **13 Claims**

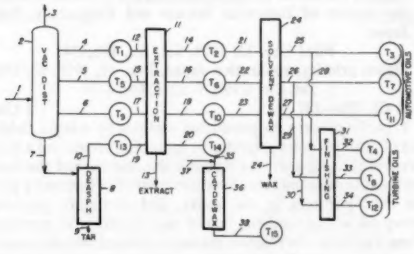


1. A process for forming an adduct of urea and a normal paraffin which comprises passing a liquid hydrocarbon mixture comprising n-paraffins having at least 6 carbon atoms per molecule, non adduct-forming hydrocarbons, and from 1 to 3 volume percent of a monohydric alcohol having from 1 to 2 carbon atoms per molecule upwardly through a contacting zone into contact with solid particles of urea at a flow rate sufficient to fluidize said particles of urea without substantial entrainment in said liquid hydrocarbon mixture thereby maintaining a dense phase fluidized bed of solid urea particles in said contacting zone, said bed having a distinct upper level below the outlet for the treated hydrocarbon mixture and effecting the formation of solid urea-n-paraffin adduct with at least a portion of the n-paraffins contained in said hydrocarbon mixture, said adduct tending to concentrate in the upper portion of said fluidized bed; withdrawing treated hydrocarbon mixture depleted in n-paraffins at a point above the upper level of said dense phase fluidized bed and withdrawing said adduct from the upper portion of said dense phase fluidized bed.

4,259,170
PROCESS FOR MANUFACTURING LUBE BASE STOCKS

Ronald I. Graham, Yardley, Pa., and Edwin A. Hicks, Cherry Hill, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Sep. 14, 1979, Ser. No. 75,558
Int. Cl.³ C10G *55/00, 71/00*
U.S. Cl. 208—33 **12 Claims**



1. In a process for manufacturing low pour point lubricant base stocks from vacuum distillation fractions of a reduced paraffin base crude or of a reduced mixed base crude, said fractions comprising a distillate fraction and a deasphalted vacuum residuum, which process comprises dewaxing said fractions thereby reducing the pour point thereof, the improvement, whereby more efficiently producing said base stocks, which comprises dewaxing said deasphalted vacuum residuum to a predetermined pour point by contact under dewaxing conditions with a dewaxing catalyst, said catalyst and conditions being effective to produce a yield of dewaxed residuum not less than is produced by solvent dewaxing said residuum to the same pour point, and solvent dewaxing said distillate fraction.

4,259,171
PROCESS FOR THE SEPARATION OF QUINOLINE-INSOLUBLE COMPONENTS FROM COAL TAR PITCH

Jürgen Stadelhofer, Dortmund, and Gerd Collin, Duisburg, both of Fed. Rep. of Germany, assignors to Rütgerswerke Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 28, 1979, Ser. No. 15,985
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1978, 2810332
Int. Cl.³ C10C *1/18*
U.S. Cl. 208—45 **6 Claims**

1. In a process for the separation of quinoline-insoluble components wherein coal tar pitch is treated with an organic solvent and the insoluble components are thereafter separated, the improvement which comprises selecting a coal tar pitch with a softening point of greater than 60° C. (according to Kraemer-Sarnow) and treating said pitch with a solvent mixture comprising a paraffinic solvent selected from the group consisting of aliphatic and cyclo-aliphatic hydrocarbon solvents and a tar solvent which is an aromatic solvent obtainable from coal tar or petroleum fractions, at temperatures of 200° to 270° C. wherein the ratio of paraffinic solvent to tar solvent ranges from 0.2 to 1 and up to 3 to 1 and wherein the separation takes place at a temperature between 160° and 200° C.

4,259,172
TREATMENT OF HEAVY COAL FRACTIONS

Ronald Liotta, Clark, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 969,362, Dec. 14, 1978, abandoned. This application Aug. 23, 1979, Ser. No. 69,061
Int. Cl.³ C10G *1/00, 1/06*
U.S. Cl. 208—46 **22 Claims**

1. A method for improving the properties of coal bottoms and products therefrom, by oxygen-alkylation and/or oxygen-acylation, which method comprises contacting the coal bottoms with a solution comprising:

(a) at least one quaternary base represented by the formula R_4QOR'' where each R is the same or different group selected from the group consisting of C_1 to about C_{20} alkyl and C_6 to about C_{20} aryl; Q is nitrogen or phosphorus; and R'' is selected from the group consisting of hydrogen, C_1 to about C_{10} alkyl, aryl, alkylaryl, arylalkyl and acetyl; and

(b) at least one compound represented by the formula R'X where R' is a C_1 to C_{20} alkyl or acyl group and X is selected from the group consisting of halides, sulfates, bisulfates, acetates and stearates; wherein X is attached to a primary or secondary carbon atom.

4,259,173
TREATMENT OF COAL LIQUIDS

Ronald Liotta, Clark, and Martin L. Gorbaty, Westfield, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 969,361, Dec. 14, 1978, abandoned. This application Aug. 23, 1979, Ser. No. 69,066
Int. Cl.³ C10G *0/00, 1/00; C10C 0/00*
U.S. Cl. 208—46 **20 Claims**

1. A method for improving properties of a coal liquid by

oxygen-alkylation and/or oxygen-acylation, which method comprises contacting the coal liquid with a solution comprising:

(a) at least one quaternary base represented by the formula R_4QOR'' where each R is the same or different group selected from the group consisting of C_1 to about C_{20} alkyl and C_6 to about C_{20} aryl; Q is nitrogen or phosphorus; and R'' is selected from the group consisting of hydrogen, C_1 to about C_{10} alkyl, aryl, alkylaryl, arylalkyl and acetyl; and

(b) at least one compound represented by the formula R'X where R' is a C_1 to C_{20} alkyl or acyl group and X is selected from the group consisting of halides, sulfides, bisulfates, acetates and stearates; wherein X is attached to a primary or secondary carbon atom.

4,259,174

CATALYTIC DEWAXING OF HYDROCARBON OILS

Nai Y. Chen, Titusville, and William E. Garwood, Haddonfield, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Mar. 19, 1979, Ser. No. 21,735

Int. Cl.[3] C10G *1/04, 11/05, 21/00, 47/16*

U.S. Cl. 208—111 **15 Claims**

1. In a process for manufacturing a refined lubricating oil stock having a V.I. of at least 85 and a pour point not greater than +25° F. from a waxy stock boiling within the range of from about 450° to about 1050° F., said process comprising catalytically dewaxing said waxy stock to a pour point not greater than +25° F., the improvement whereby effecting said dewaxing with increased selectivity, which comprises: contacting said waxy stock and hydrogen with a catalyst comprising synthetic offretite at a pressure of about 200 to 2000 psig, a LHSV of from 0.1 to 5.0, a temperature from about 500° to about 750° F.; and recovering a dewaxed oil stock with a pour point not greater than +25° F.

4,259,175

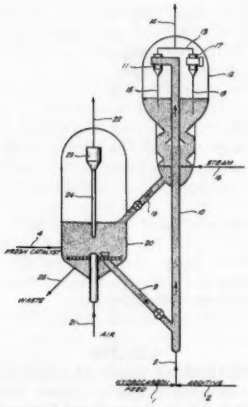
PROCESS FOR REDUCING SOX EMISSIONS FROM CATALYTIC CRACKING UNITS

Dennis P. McArthur, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Oct. 10, 1978, Ser. No. 949,755

Int. Cl.[3] C10G *11/06;* **B01J** *21/20, 37/14*

U.S. Cl. 208—113 **9 Claims**



1. In a cyclical catalytic cracking process wherein a sulfur-containing hydrocarbon feedstock is fed to a catalytic cracking reaction zone and therein contacted with cracking catalyst particles at an elevated temperature, whereby said hydrocarbon feedstock is converted to product hydrocarbons while said catalyst particles become deactivated with sulfur-containing coke deposits, and said catalyst particles are reactivated in a regeneration zone by burning said coke off said cracking catalyst particles, thereby concomitantly producing an SO_x-containing flue gas, and said cracking catalyst particles are then recycled to said catalytic cracking reaction zone, the improvement comprising reducing the amount of SO_x compounds carried with said flue gas by introducing into the catalytic cracking cycle one or more organic, aluminum-containing compounds in a manner such that dissolved aluminum-containing components enter the catalytic cracking reaction zone.

4,259,176

RESTRICTING SILICA CONTENT OF CATALYST INVENTORY TO PREVENT ALUMINA POISONING FOR SO_x CONTROL

William A. Blanton, Woodacre, and Robert L. Flanders, San Anselmo, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 967,048, Dec. 6, 1978, abandoned. This application Sep. 13, 1979, Ser. No. 74,838

Int. Cl.[3] C10G *11/05, 11/18*

U.S. Cl. 208—120 **6 Claims**

1. A process for cracking hydrocarbons in the absence of externally supplied molecular hydrogen, comprising steps of:

(a) cycling acidic cracking catalyst particles between a cracking zone and a regeneration zone, said catalyst particles comprising from 5 to 50 weight percent of a zeolitic crystalline aluminosilicate associated with a porous matrix, said matrix including less than 40 weight percent silica;

(b) cracking a sulfur-containing hydrocarbon stream in contact with said catalyst particles in said cracking zone;

(c) forming a sulfur oxides-containing flue gas in said regeneration zone by burning coke off said catalyst particles with a molecular oxygen-containing gas;

(d) lowering the amount of gaseous sulfur oxides in said flue gas by reacting sulfur oxides in said regeneration zone with alumina included in a particulate solid other than said catalyst particles to form a sulfur-containing solid, said particulate solid being physically admixed with said catalyst particles in an amount of 0.1 to 25 weight percent of said catalyst particles, said particulate solid including at least 90 weight percent alumina;

(e) forming hydrogen sulfide in said cracking zone by reacting the sulfur-containing solid with said hydrocarbon stream; and

(f) removing the hydrogen sulfide and said hydrocarbon stream from said cracking zone.

4,259,177

PROCESS FOR THE PRODUCTION OF OLEFINS

Tetsuo Ueda; Masuo Ohta, both of Yokohama, and Seiroku Sugano, Fuchu, all of Japan, assignors to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed Dec. 13, 1979, Ser. No. 103,174

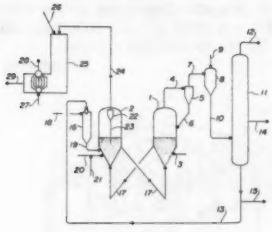
Claims priority, application Japan, Dec. 21, 1978, 53/156893

Int. Cl.[3] C10G *9/32;* **C07C** *4/04*

U.S. Cl. 208—127 **5 Claims**

1. In the process for producing olefines by using a fluidized bed of coke particles provided in each of a reactor and a heater, circulating coke particles through the reactor and the heater, heating the coke particles by a combustion of fuel and a part of the coke particles in the heater, and thermally cracking a heavy oil with a fluidized bed of said heated coke particles as a heat carrier in the reactor, the improvement which comprises introducing a distillation residue obtained by distillation of the liquid by-product of thermal cracking into a combustion chamber and subjecting said residue to partial combustion with air in an excess of said residue, said excess of residue being from 20 to 100 percent of the stoichiometric amount, to generate a high-temperature, low-calorie gas, introducing said gas

through a side inlet into the heater in order to heat the coke particles by heat exchange, blowing air from an air inlet positioned below said inlet for introducing the high-temperature,



low-calorie gas into said heater and combusting coke deposited on the surface of said coke particles by thermal cracking of the heavy oil in the reactor in order to heat said coke particles.

4,259,178

COKE FROM COAL AND PETROLEUM

Francis E. Wynne, Jr., Allison Park; Jaime Lopez, Pittsburgh, and Edward J. Zaborowsky, Harwick, all of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 26, 1979, Ser. No. 23,803
Int. Cl.³ C10G 9/14
U.S. Cl. 208—131 **1 Claim**

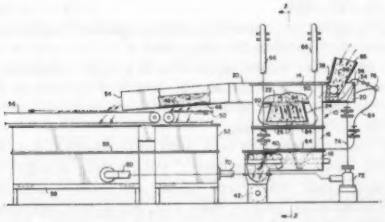
1. In a process for the manufacture of coke from a mixture of coal and a petroleum processing residue, the improvement consisting of mixing 10–30% by-weight coal having a proximate analysis by-weight of about of 32.7% volatiles, 7.2% moisture, 44.8% fixed carbon and 15.3% ash with about 90 to 70% by-weight petroleum processing residue having a weight composition of about 51% aromatics, 19.3% saturates, 25.2% polar compounds and 4.5% asphaltenes with a specific gravity of about 1.006 at a mixing temperature of 50°–65° C. until a homogenous mixture is formed, preheating the homogenous mixture to a temperature of about 350° C. to initiate coalescence of the coal and petroleum residue, coking the mixture to remove volatiles at a temperature of about 435° C. to provide a soft, porous friable sponge-like coke having loose interparticulate bonding.

4,259,179

METHOD AND APPARATUS FOR SEPARATING SOLIDS

John Marvin, Denton, Md., assignor to The American Original Corporation, Seaford, Del.

Filed Feb. 27, 1979, Ser. No. 15,755
Int. Cl.³ B03B 5/62
U.S. Cl. 209—18 **18 Claims**



10. A method of separating the meat of bivalve mollusks from the heavier shells thereof comprising the steps of:

(a) establishing and maintaining a hydrostatic pressure differential between two communicating fluid zones by maintaining the fluid level in the first of said zones higher than the fluid level in the second of said zones;

(b) delivering mixed pieces of meat and shells to an upstream end of said second zone;

(c) delivering pressurized fluid generally horizontally to the upstream end of said second zone to entrain substantially all of said mixed meat and shell pieces and forcefully move them generally horizontally through said second zone; and

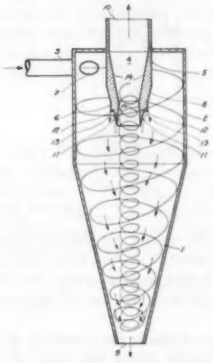
(d) permitting fluid to flow from said first zone to said second zone in response to said hydrostatic pressure differential as a generally upwardly directed separating current of substantial width in the direction of flow of the horizontal current in said second zone and generally transverse to the flow of meat and shells in said second zone, to buoy up the lighter meat pieces so that they continue generally horizontally through and remain in said second zone, and permit the heavier shells to sink downwardly through said separating current toward said first zone, thereby being separated from said lighter meat.

4,259,180

HYDROCYCLONE

Jorma Surakka, and Matti Lankinen, both of Savonlinna, Finland, assignors to Enso-Gutzeit Osakeyhtio, Helsinki, Finland

Filed May 4, 1977, Ser. No. 793,860
Claims priority, application Finland, May 14, 1976, 761359
Int. Cl.³ B04C 5/13
U.S. Cl. 209—211 **1 Claim**



1. A hydrocyclone for dividing a fiber suspension into accept and reject fractions, said hydrocyclone comprising: a generally conical separation chamber having an apex defining an outlet aperture for the discharge of the reject fraction; and a larger end located above said apex; a base part arranged above and associated with said larger end of said conical separation chamber communicating with at least one inlet opening for the fiber suspension; an accept pipe positioned in and extending through said base part and positioned coaxially with the conical separation chamber, said accept pipe having an inlet mouth located at a level between said inlet opening for the fiber suspension and said discharge aperture for the reject, said accept pipe having an outer surface along a distance thereof beginning at said inlet mouth which is in the general shape of an expanding truncated cone and having an annular lip formed therein and projecting from said truncated conical surface to define a discontinuity in said truncated conical surface, said lip having a curved concave shape facing the reject outlet whereby part of the vortex coming in the general direction from the reject outlet towards the accept mouth is guided and deflected along a portion of said truncated conical surface into said concave shape of the lip and back towards the reject outlet, while the truncated conical surface of the accept pipe

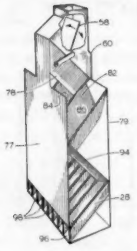
decreases the rotational radius of the flow coming from the base part around the accept pipe increasing the centrifugal force effect in the base part; the outer surface of said lip having an essentially cylindrical shape and the inner side of said accept pipe having a first slightly converging zone beginning at the inlet mouth thereof and a second diverging zone associated with said first zone and leading to an outlet for the accept fraction; said truncated conical surface of the accept pipe having a generally cylindrical surface portion formed therein above said lip in the direction of flow of the accept portion to calm the flow of material around the lip.

4,259,181

STREAM SPLITTER FOR SPREADING PARTICULATE MATERIAL

Gonzalo S. Leon, Sudbury, and Richard C. Fortier, Concord, both of Mass., assignors to Cabot Corporation, Boston, Mass.

Filed Apr. 16, 1979, Ser. No. 30,565
Int. Cl.[3] B03C *1/18*
U.S. Cl. 209—231 **22 Claims**



16. In a separator for separating selected material from a stream of particulate material carried by a conveyor belt, the separator including electromagnetic means for distinguishing particulate material within the stream the improvement comprising:

a gravity feed stream spreader for spreading an inlet stream of particulate material into a flat sheet of substantially uniform thickness across the conveyor belt by splitting the inlet stream in successive stages, the spreader comprising

an inlet stage including a single inclined inlet trough for receiving the entire inlet stream, the sides at the bottom of the inlet trough being inclined downward toward a longitudinal bottom axis of the trough for concentrating the stream symmetrically about the longitudinal bottom axis of the trough;

at least one intermediate stage each intermediate stage including twice the number of inclined troughs as are in the preceding stage, each pair of troughs of each intermediate stage being positioned with respect to the bottom axis of preceding trough to split into the material from the preceding trough into two substantially equal stream segments, the sides at the bottom of each intermediate stage trough being inclined downward toward a longitudinal bottom axis of the trough for concentrating a stream segment symmetrically about the longitudinal axis of the trough; and

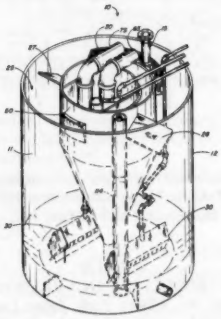
an outlet stage including an inclined surface for spreading stream segments from the final intermediate stage into a flat sheet of substantially uniform thickness on the conveyor belt.

4,259,182

WASTE TREATMENT APPARATUS

Robert E. Belveal, New Iberia, La., assignor to Houston Systems Manufacturing Co., Houston, Tex.

Filed Jul. 26, 1979, Ser. No. 60,844
Int. Cl.[3] C02F *3/22*
U.S. Cl. 210—629 **69 Claims**



36. A waste water treatment method comprising:

a. introducing a waste water stream to be treated into a cylindrical treatment vessel having at least a central clarifier and a vessel outer wall, an aeration chamber being defined between the clarifier and the vessel wall;

b. bubbling air with an aerator upwardly in the treatment vessel from the bottom portion thereof within the aeration chamber portion;

c. deflecting the air introduced using at least one angularly disposed baffle plate placed generally above the introduced air to produce a continuous rotational flow in the vessel about the cylindrical vessel central clarifier, the baffle extending a partial distance beneath the water surface in the vessel downwardly;

d. collecting clarified water at the central portion of the circular vessel and below the vessel water surface.

4,259,183

REVERSE OSMOSIS MEMBRANE

John E. Cadotte, Minnetonka, Minn., assignor to Midwest Research Institute, Kansas City, Mo.

Continuation-in-part of Ser. No. 958,593, Nov. 7, 1978. This application Jan. 10, 1979, Ser. No. 2,396
Int. Cl.[3] B01D *13/00*; C08G *69/42*; C08C *19/20*
U.S. Cl. 210—654 **17 Claims**

1. A process for preparation of a composite reverse osmosis membrane comprising the steps of:

(a) coating a porous support with a layer comprising an aqueous solution containing, dissolved therein, an essentially monomeric, polyfunctional, essentially water-soluble secondary amine;

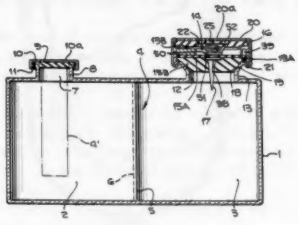
(b) contacting the said layer with an relatively water-insoluble, essentially monomeric, volatilizable polyfunctional acid halide component having an average acid halide functionality greater than 2.05, for a time sufficient to effect in-situ chain extension and crosslinking reactions between the secondary amine and the polyfunctional acid halide; and

(c) drying the product of step (b) to form the composite reverse osmosis membrane.

4,259,184
SEALED CONTAINER ADAPTED FOR MEDICAL USAGE AND METHOD OF SEALING

Hubert A. D'Arnal, 350 N. Genesee Ave., Los Angeles, Calif. 90036

Continuation of Ser. No. 718,576, Aug. 30, 1976, abandoned. This application Oct. 31, 1978, Ser. No. 956,356
Int. Cl.[3] B01D *35/02, 31/00*
U.S. Cl. 210—85 27 Claims



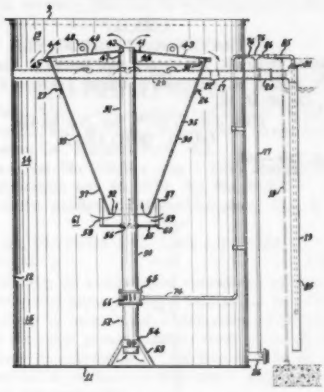
24. A sealed container adapted to receive and dispense fluids without contamination which comprises, a bottle having a neck, a seal assembly fitted to said neck and sealed twice therewith at two spaced levels, said seal assembly including a lower seal fixed to said neck and a removable upper seal spaced from said lower seal and cooperating therewith to define therebetween at said neck an operative space compartment sealed from both the inside and outside of said bottle, said lower seal having an inlet passageway and an outlet passageway protruding on both sides thereof joining the interior of said bottle with said operative space compartment, independent seal means for each passageway accessible from said operative space compartment, said upper seal being removable from outside said bottle to give access to said independent seal means, a solid filter having a myriad of pores associated with said inlet passageway to filter fluid before it enters the bottle, said portion of the outlet passageway projecting into said operative space compartment constructed and arranged to mate with tubing for dispensing the contents of the bottle, said portion of the inlet passageway projecting into said operative space compartment constructed and arranged to receive means to insert additives into the bottle, the independent seal means being selectively openable to permit flow of fluid therethrough whereby any fluid entering the bottle through the inlet passageway is filtered before it can be dispensed from the outlet passageway, and a valve in said outlet passageway upstream from said independent seal means for said outlet passageway.

4,259,185
SLUDGE THICKENING APPARATUS

James A. Mixon, 5050 Stepp Ave., Jacksonville, Fla. 32216

Continuation of Ser. No. 929,732, Jul. 31, 1978, abandoned. This application Dec. 26, 1979, Ser. No. 107,040
Int. Cl.[3] C02F *11/02, 3/20*
U.S. Cl. 210—195.3 11 Claims

1. A sludge thickening apparatus for treating sludge from a sludge holding tank of a sewage treatment facility comprising a vertical tank having a bottom wall and an inlet means connected to said vertical tank for supplying sludge thereto; a vertical hopper disposed within and supported by said tank and having a top opening and a bottom opening communicating generally medially in both horizontal and vertical directions with the interior of said tank; a cover plate closing said hopper top opening; said hopper including wall means defining said top opening and said bottom opening and a side wall diverging outwardly substantially from said bottom opening to said top opening; a vertical airlift member supported by said tank and having an upper end portion arranged to supply sludge above and onto said cover plate and a lower end portion disposed below said hopper and adjacently above said bottom wall of said tank; air injector means connected to said airlift member for selectively feeding air thereto thereby creating a suction for lifting sludge from said tank into said lower end portion and out said upper end portion; and weir means disposed in said hopper and having an opening communicating with the interior of said hopper for conveying separated liquid in said

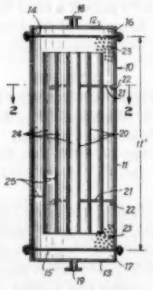


hopper outwardly of said tank, an outlet means connected to said vertical tank for conveying sludge outwardly of said tank, and selective shut-off valve means connected to said outlet means for opening same and discontinuing the supply of air to said air injector means and for closing said outlet means and starting the supply of air to said air injector means.

4,259,186
GEL FILTRATION COLUMN

Joseph Boeing, Darmstadt, and Hermann A. Mueller, Darmstadt-Arheilgen, both of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Feb. 13, 1979, Ser. No. 11,879
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808154
Int. Cl.[3] B01D *15/08*
U.S. Cl. 210—198.2 5 Claims



1. An elongated gel filtration column having an outer wall and opposed inlet and outlet ends, said outer wall defining at least one gel chamber adapted to be filled with a filter gel, a pair of perforated trays respectively secured to said wall at said inlet and outlet ends, and inlet and outlet chambers respectively secured to said outer wall at said inlet and outlet ends in communication with said gel chamber through said perforated trays, said gel chamber being subdivided by a plurality of interior longitudinally extending partition walls arranged par-

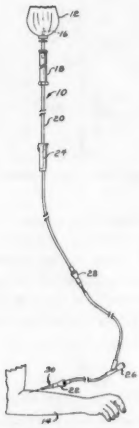
allel to each other, said partition walls being of a length which is shorter than the length of the gel chamber and having free ends respectively inwardly spaced from said trays whereby the filter gel in said filter chamber is located between said partition walls and in the space between the ends of said walls and said trays and is subjected to substantially uniform pressure throughout the column.

4,259,187

INTRAVENOUS FLUID FILTER

Michael P. DeFrank, Woodstock, and Joseph A. Bancsi, Vernon Hills, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 7, 1979, Ser. No. 46,426
Int. Cl.³ B01D *35/02*
U.S. Cl. 210—446 **24 Claims**



1. In a parenteral fluid administration set comprising fluid conduit means including housing means defining a flow path for conveying liquid between a parenteral fluid reservoir and a patent, the improvement comprising a unitary hydrophobic plastic depth filter element carried within said flow path in said housing means to filter liquid passing therethrough, said depth filter having a mean pore size between about 20 and 40 microns, inclusive, and a void volume between about 40% and 65%, inclusive, so as to permit a fluid flow rate of at least 100 c.c./hr. with about 30 inches of fluid head pressure.

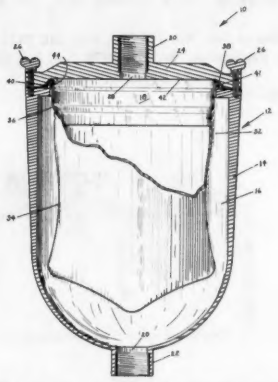
4,259,188

FLUID FILTER HOUSING AND FILTER BAG SEAL

Howard W. Morgan, Michigan City, Ind., assignor to Filter Specialists, Inc., Michigan City, Ind.

Filed May 29, 1979, Ser. No. 43,154
Int. Cl.³ B01D *29/12*
U.S. Cl. 210—448 **9 Claims**

1. A fluid filter including a housing having a side wall defining a chamber therein, said housing having an opening to said chamber, a cap spanning said housing opening, securing means for releasably connecting said cap to said housing, an inlet port and an outlet port, a filter bag having a side wall formed of fluid pervious material; said bag inciuding a ring formed of a shape-retaining, fluid impervious material defining an opening into said bag, said filter bag being received in said housing chamber with said bag opening in communication with said housing opening, the improvement therein comprising an annular rim carried by said housing and defining in part said housing opening, said bag ring including an external down-turned flexible circumferential lip, said bag lip forming an acute angle with respect to said bag side wall, said bag lip overlying said rim, said cap having an inner surface, said cap inner surface contacting said bag lip and urging said lip into



fluid-tight engagement with said rim entirely about the rim when said securing means connects said cap to said housing.

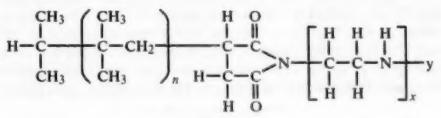
4,259,189

NOVEL LIQUID MEMBRANE FORMULATIONS

Norman N. Li, Edison, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jan. 19, 1978, Ser. No. 870,806
Int. Cl.³ B01D *39/00, 13/00*
U.S. Cl. 260—29.6 AN **6 Claims**

1. An emulsion stable from about −20° C. to about 120° C., but less than the boiling point of any of the components of said emulsion, which comprises an interior phase surrounded by an exterior phase, said exterior phase being water-immiscible and comprising an oil component containing as the sole surfactant and strengthening agent an additive selected from the group consisting of a polyamine derivative having the general formula:



wherein n for the polyisobutylene portion varies from 10 to 60, x varies from 3 to 10, and y is selected from the group consisting of hydrogen, hydrogen-containing nitrogen radicals, hydrogen and oxygen-containing nitrogen radicals, and alkyl radicals having up to 10 carbons, alkyl radicals having up to 10 carbons which contain nitrogen, oxygen or both, and mixtures of said polyamine derivatives; wherein said additive comprises from about 0.001 wt.% to about 50 wt.% of said exterior phase, said interior phase being immiscible with the interior phase, said interior phase comprising from about 25 wt.% to about 90 wt.% of the total emulsion.

4,259,190

GLASS FIBERS WITH REDUCED TENDENCY TO FORM GUMMING DEPOSITS AND SIZING COMPOSITION

Dennis M. Fahey, Lexington, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 13, 1979, Ser. No. 75,069
Int. Cl.³ B32B *7/00*; D03D *3/00*
U.S. Cl. 252—8.6 **16 Claims**

1. An aqueous sizing composition for use with glass fibers to

produce sized glass fibers with improved processibility and improved packaging structure for ease of handling and fabrication that has a reduced tendency to form gumming deposits on fabrication machinery under high relative humidity conditions comprising in weight percent based on the non-aqueous components of the sizing composition:

(a) about 50 to about 75 percent of a starch mixture comprised of about 75 weight percent to about 95 weight percent of an underivatized, high amylose starch component and about 5 weight percent to about 25 weight percent of an easily cookable, low amylose starch component;

(b) about 5 to about 35 percent by weight of a wax selected from the group consisting of animal waxes, vegetable waxes, mineral waxes, synthetic waxes and petroleum waxes;

(c) about 9 to about 77 percent by weight of a nonionic lubricant having fatty triglycerides selected from the group consisting of hydrogenated cotton seed oil, hydrogenated corn oil, hydrogenated soybean oil and hydrogenated vegetable oil;

(d) about 10 to about 45 percent by weight of an alkyl imidazoline textile softener;

(e) at least 0.01 part per part of wax and per part of nonionic lubricant of a mixture of sorbitan monostearate emulsifying agent and polyoxyethylene sorbitan monostearate emulsifying agent wherein one emulsifier has an HLB as low as around 4.5 and the other emulsifying agent has a HLB as high as 15 and wherein the ratios of the emulsifiers are sufficient to give an HLB for the emulsifying mixture between about 8 and about 12.

4,259,191

PROCESS FOR THE PREPARATION OF SULFOBETAINES

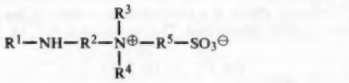
Helmut Wagner, Ketsch, Fed. Rep. of Germany, assignor to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 931,894, Aug. 8, 1978, abandoned. This application Apr. 19, 1979, Ser. No. 31,520

Int. Cl.³ E21B *43/22;* **C07C** *143/00*

U.S. Cl. 252—8.55 D **3 Claims**

1. In a method for recovering mineral oil from deposits thereof by flooding the deposit with an aqueous solution and recovering the oil from the flooding solution, the improvement which comprises flooding the deposit with an aqueous solution containing from about 0.0005 to 5 weight percent of a sulfobetaine having the formula



wherein

R^1 is a naphthenoyl residue,

R^2 is an alkyl residue with 2 to 6 carbon atoms,

R^3 and

R^4 may be the same or different and represent linear alkyl residues with 1 to 4 carbon atoms,

R^5 is an alkylene residue with 1 to 4 carbon atoms.

4,259,192

LUBRICATING OIL COMPOSITIONS CONTAINING POLYETHER DITHIOPHOSPHATES

Jennifer E. Lilburn, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 2, 1979, Ser. No. 26,461

Int. Cl.³ C10M *7/46;* **C07F** *3/06*

U.S. Cl. 252—32.7 E **2 Claims**

1. A lubricating oil composition comprising a major amount of an oil of lubricating viscosity derived from petroleum sources and a minor amount of the zinc salt of a dithiophosphate ester of a dithiophosphoric acid and a hydrocarbyl-terminated poly(oxyalkylene) alcohol, wherein said hydrocarbyl-terminated poly(oxyalkylene) alcohol is of molecular weight of from about 200 to 10,000 and is composed of about 8–100 oxyalkylene units selected from 3 to 5 carbon atom oxyalkylene units, at least a sufficient number of which are branched-chain oxyalkylene units to render said zinc salt soluble in an oil of lubricating viscosity, and said hydrocarbyl group contains from 1 to 30 carbon atoms.

4,259,193

OVERBASED SULPHONATES

Robert Tirtiaux, Mont Saint Aignan, and Robert M. Laurent, Bois Guillaume, both of France, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 930,564, Aug. 3, 1978, abandoned. This application Apr. 16, 1979, Ser. No. 29,997

Claims priority, application United Kingdom, Aug. 4, 1977, 32725/77

Int. Cl.³ C10M *1/40, 1/10, 3/34, 3/02*

U.S. Cl. 252—33 **7 Claims**

1. A lubricating oil composition containing an overbased alkaline earth metal mono-alkylaryl sulphonate in which the alkylaryl moiety is mono-alkyl orthoxylene or mono-alkyl toluene and the alkyl group contains from 15 to 40 carbon atoms prepared by alkylating orthoxylene or toluene with a mixture of branched and linear olefins which contains 5 to 30% by weight of said linear olefin.

4,259,194

REACTION PRODUCT OF AMMONIUM TETRATHIOMOLYBDATE WITH BASIC NITROGEN COMPOUNDS AND LUBRICANTS CONTAINING SAME

Louis deVries, Greenbrae, and John M. King, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 28, 1979, Ser. No. 52,695

Int. Cl.³ C10M *1/54*

U.S. Cl. 252—46.4 **11 Claims**

1. A process for preparing a sulfurized molybdenum-containing composition which comprises reacting ammonium tetrathiomolybdate and a basic nitrogen compound selected from the group consisting of a succinimide, carboxylic acid amide, hydrocarbyl monoamine, hydrocarbyl polyamines, Mannich base, phosphonamide, thiophosphonamide, phosphoramide, hydrocarbon dispersant viscosity index improvers, or mixtures thereof.

9. The product prepared by the process of claim **1, 2, 3, 4, 5, 6, 7** or **8.**

10. A lubricating oil composition comprising an oil of lubricating viscosity and from 0.05 to 15% by weight of the product of claim **9.**

11. A lubricating oil concentrate composition comprising an oil of lubricating viscosity and from 15 to 90% by weight of the product of claim **9.**

4,259,195

REACTION PRODUCT OF ACIDIC MOLYBDENUM COMPOUND WITH BASIC NITROGEN COMPOUND AND LUBRICANTS CONTAINING SAME

John M. King, San Rafael, and Louis deVries, Greenbrae, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 28, 1979, Ser. No. 53,014

Int. Cl.³ C10M *1/10*

U.S. Cl. 252—49.7 **15 Claims**

1. A process for preparing a molybdenum-containing composition which comprises reacting an acidic molybdenum compound selected from the group consisting of molybdic acid, ammonium molybdate, alkali metal molybdate, bromide and chloride molybdenum salts, and molybdenum trioxide and a basic nitrogen compound selected from the group consisting

of a succinimide, carboxylic acid amide, Mannich Base, phosphonamide, thiophosphonamide, phosphoramide, and a hydrocarbon dispersant viscosity index improver wherein from 0.01 to 2 atoms of molybdenum are present per basic nitrogen atom, in the presence of a polar promoter wherein from 0.01 to 50 mols of promoter are present per mol of molybdenum, to form a molybdenum-containing complex.

10. The product prepared by the process of claims **1**, **2**, **3**, **4**, **5**, **6**, **7** or **8**.

12. A lubricating oil composition comprising an oil of lubricating viscosity and from 0.05 to 15% by weight of the product of claim **10**.

4,259,196

ASBESTOS-FREE COMPRESSION MOLDING COMPOSITIONS FOR THERMAL AND ELECTRICAL INSULATORS

Harry R. Grossman, Meriden, Conn., assignor to Meriden Molded Plastics, Inc., Meriden, Conn.

Filed Jul. 9, 1979, Ser. No. 55,627

Int. Cl.[3] **C04B** *43/00;* **H01B** *3/02*

U.S. Cl. 252—62 **4 Claims**

1. An asbestos-free composition moldable under heat and pressure to form dense, hard products having good thermal and electrical resistance, said compositions comprising mixtures of calcium magnesium ferro silicate based particulate material in predominant amount consisting of olivine and wollastonite, in combination with phosphoric acid.

4,259,197

PROCESS OF PREPARING FERRITE POWDERS

Jean-Marie Boeuf, Grenoble; Pierre Gerest, Allevard, and Henri Lemaire, La Tronche, all of France, assignors to Aimants Ugimag S.A., Saint-Pierre-d'Allevard, France

Continuation of Ser. No. 876,355, Feb. 9, 1978, abandoned. This application Apr. 9, 1980, Ser. No. 138,532

Int. Cl.[3] **C04B** *35/26*

U.S. Cl. 252—62.58 **5 Claims**

1. In a process for preparing ferrite powders of Ba, Sr or Pb that are to be incorporated in an elastomeric, thermoplastic, or thermosettable binder for the purpose of obtaining flexible or rigid permanent magnets with high magnetic properties, the process comprising the steps of preparing a mixture of particles of Fe_2O_3 and at least one carbonate of Ba, Sr or Pb, calcining the mixture to produce Ba, Sr or Pb ferrite powder, the powder being then adapted for incorporation in said binder and for orientation in the binder, the improvement in said process comprising the steps of adding to said mixture NaF in a total amount of 0.5% to 15% of the total weight of said mixture, and sodium tetraborate ($B_4O_7Na_210H_2O$) in a total amount of 0.2 to 7% of the weight of said mixture, thereafter calcining the mixture between 850° and 1100° for at least 15 minutes, crumbling the calcined mixture, and acid washing, water rinsing and drying the mixture, the powder obtained comprising single domain, approximately one micron size particles suitable for direct incorporation and orientation in said binder, the magnets obtained upon incorporation and orientation of said powder in said binder being characterized by higher Br, Hc and BHmax properties than magnets obtained utilizing powder prepared by the above process but having only one of the additives NaF and sodium tetraborate.

4,259,198

USE OF CRYSTALLINE, CROSSLINKED SYNTHETIC RESINS AS A STORAGE MATERIAL IN LATENT HEAT STORES

Ursula Kreibich, Riehen, and Rolf Schmid, Gelterkinden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 680,263, Apr. 26, 1976, abandoned. This application Nov. 28, 1978, Ser. No. 965,621

Claims priority, application Switzerland, Apr. 28, 1975, 5446/75

Int. Cl.[3] **C09K** *5/00, 5/02*

U.S. Cl. 252—70 **23 Claims**

1. An improved process of absorbing and releasing thermal energy in a latent heat accumulator using a latent heat storage material, wherein the improvement comprises

employing as the latent heat storage material a crystalline crosslinked synthetic resin selected from the group consisting of epoxide resins, polyurethane resins, polyester resins and mixtures thereof which contain, as crystallite-forming blocks, radicals of long-chain dicarboxylic acids or dialcohols of the formula I

$$X^1—A—X^2 \qquad (I)$$

in which X^1 and X^2 each represent a —CO—O— group or a —O— group in which A denotes a substantially linear radical, in which polymethylene chains alternate regularly with ether oxygen atoms or carboxylic acid ester groups, and the quotient Z/Q, wherein Z is the number of CH_2 groups present in the recurring structural element of the radical A and Q is the number of oxygen bridges present in the recurring structural element of the radical A, must be at least 3 and wherein the total number of carbon atoms present in the radical A in alternating carbon chains is at least 30, and wherein the crosslinked crystalline synthetic resin has at least one crystallite melting point.

4,259,199

ALKALINE DISHWASHER DETERGENT

Maria Luz S. Wee, Cincinnati; Lawrence A. Gilbert, and Jacob Mathew, both of Fairfield, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 53,163, Jun. 29, 1979, abandoned, which is a continuation-in-part of Ser. No. 958,587, Nov. 7, 1978, abandoned. This application Sep. 18, 1979, Ser. No. 76,696

Int. Cl.[3] **C11D** *7/12, 7/16, 7/56*

U.S. Cl. 252—99 **19 Claims**

1. An automatic dishwashing composition providing optimum cleaning, spotting and filming consisting essentially of:

(1) from about 20% to about 50% of alkali metal tripolyphosphate; (2) sodium or potassium carbonate in an amount to raise the reserve alkalinity of the composition to from about 10 to about 20, but no more than about 13% carbonate; (3) sodium or potassium silicate solids providing from about 6% to about 15% of SiO_2, but no more than about 20% silicate; (4) available chlorine at a level of from about ¾% to about 2.5% from a sodium or potassium dichlorocyanurate; and (5) from about 2% to about 10% of a low foaming nonionic surfactant which is the condensation product of a straight chain fatty alcohol containing from about 16 to about 20 carbon atoms and from about 6 to about 15 moles of ethylene oxide per mole of alcohol

said composition having a pH of from about 9.8 to 10.7 at 2,500 ppm and being substantially free of (a) materials having a pH of 12 or more at a concentration of 1% in water, (b) orthophosphates and (c) organic chelating builders.

4,259,200

BLEACHING AND CLEANING COMPOSITIONS

Peter S. Sims, Chester; Robin S. Heslam, Birkenhead, and Richard L. Morris, Tarporley, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,416

Claims priority, application United Kingdom, Apr. 6, 1979, 12141/79

Int. Cl.³ C11D *7/54*

U.S. Cl. 252—102 **13 Claims**

1. A bleaching and cleaning composition comprising a percompound bleach, an activator for said percompound bleach and an organic phosphonate compound, selected from the group consisting of ethylene diamine tetra-methylene phosphonate -"EDTMP", and diethylene triamine penta-(methylene phosphonate) - "DTPMP", and mixtures thereof, wherein said organic phosphonate compound is present as a complex of a metal ion selected from the group consisting of calcium, magnesium, zinc and aluminium ions, the molar ratio of said metal ion to said phosphonate compound being at least 1:1.

4,259,201

DETERGENT COMPOSITION CONTAINING ORGANIC PERACIDS BUFFERED FOR OPTIMUM PERFORMANCE

John R. Cockrell, Jr., Loveland, and Dean C. Hanley, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

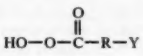
Filed Nov. 9, 1979, Ser. No. 93,092

Int. Cl.³ C11D *7/54*

U.S. Cl. 252—103 **7 Claims**

1. A granular detergent composition consisting essentially of:

(a) from about 0.1% to about 20% of a wash water-soluble or wash-water-dispersible organic peroxy acid bleaching agent having the formula



wherein R is an alkyl or alkylene group containing from 1 to about 20 carbon atoms preferably from about 6 to about 16 carbon atoms or a phenylene group and Y is selected from the group consisting of hydrogen, halogen, alkyl, aryl, and anionic groups and mixtures thereof;

(b) from about 1% to about 70% of a water-soluble detergent surfactant selected from the group consisting of anionic, nonionic, zwitterionic, amphoteric, semi-polar nonionic and cationic surfactants, and mixtures thereof;

(c) from about 5% to about 80% of a detergency builder; the balance being water sodium sulfate, or mixtures thereof, the product being buffered to a pH, in a 1500 ppm solution, of from about 8.5 to about 8.6 in water of about 2 grains hardness; and to no less than about 8 in water of 14 grains hardness.

4,259,202

CLEANING AND PRESERVATIVE SOLUTION FOR CONTACT LENSES

Kyoichi Tanaka, and Akira Tsuzuki, both of Nagoya, Japan, assignors to Toyo Contact Lens Co., Ltd., Nagoya, Japan

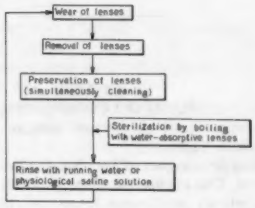
Filed Jun. 4, 1979, Ser. No. 45,053

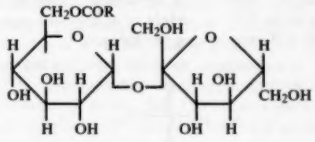
Claims priority, application Japan, Feb. 27, 1979, 54/22662

Int. Cl.³ C11D *1/66, 3/22*

U.S. Cl. 252—107 **6 Claims**

1. A cleaning and preservative solution for contact lenses comprised of: as an effective ingredient a monoester of saccharose in a concentration of 0.01 to 0.5 w/v %, a compound selected from the group consisting of a polysaccharide and a polysaccharide derivative, in a concentration of 0.01 to 10 w/v %: said monoester being a saccharose fatty ester having the following general formula:


Wear of lenses
Removal of lenses
Preservation of lenses (simultaneously cleaning)
Sterilization by boiling with water-absorptive lenses
Rinse with running water or physiological saline solution



wherein R is a saturated or unsaturated aliphatic hydrocarbon group having 8 to 18 carbon atoms; and an alkali metal salt of a saturated fatty acid in a concentration of 0.001 to 1 w/v % having an alkyl group of 7 to 18 carbon atoms.

4,259,203

PARTICLES BASED ON POLYLACTONES DERIVED FROM POLYHYDROXYCARBOXYLIC ACIDS, AND PULVERULENT COMPOSITIONS IN WHICH THESE PARTICLES ARE PRESENT

Robert Lorquet, Rixensart, Belgium, assignor to Solvay & Cie., Brussels, Belgium

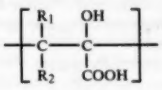
Filed Apr. 20, 1979, Ser. No. 32,003

Claims priority, application France, Apr. 24, 1978, 78 12255

Int. Cl.³ C11D *3/16*

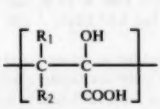
U.S. Cl. 252—174.14 **12 Claims**

1. Particles capable of disaggregation in an aqueous medium, consisting essentially of polylactones which are intermolecular and intramolecular esters of hydroxycarboxylic acid polymers containing units of the formula



in which R_1 and R_2 independently represent hydrogen or an alkyl group having 1 to 3 carbon atoms, and at least 1% by weight, relative to the polylactones, of a bicarbonate of an alkali metal or ammonium.

10. A pulverulent composition for washing, cleaning and bleaching comprising 0.1 to 80% by weight of particles capable of disaggregation in an aqueous medium, consisting essentially of (1) polylactones which are intermolecular and intramolecular esters of hydroxycarboxylic acid polymers containing units of the formula



in which R_1 and R_2 independently represent hydrogen or an alkyl group having 1 to 3 carbon atoms, and (2) at least 1% by

weight, relative to the polylactones, of a bicarbonate of an alkali metal or ammonium.

4,259,204

SHAMPOO COMPOSITION

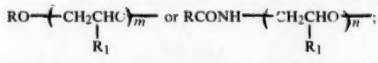
Itomi Homma, Funabashi, Japan, assignor to Kao Soap Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 56,199, Jul. 10, 1979, abandoned. This application May 30, 1980, Ser. No. 154,685
Claims priority, application Japan, Jul. 13, 1978, 53/85462
Int. Cl.[3] C11D *1/38, 3/26, 7/32*
U.S. Cl. 252—174.16 7 Claims

1. A shampoo composition, consisting essentially of:

A. from 0.8 to 20% by weight of at least one anionic phosphoric acid ester having the formula

wherein A is



R is alkyl having an average carbon atom number of 10 to 18 alkenyl having an average carbon atom number of 10 to 18; R_1 is hydrogen or methyl; m is from 0 to 6; n is from 1 to 6; B is $—OX_2$ or —A; X_1 and X_2, which can be the same or different, are hydrogen, alkali metal, alkyl (C_1–C_3)-substituted ammonium or hydroxyalkyl (C_1–C_3)-substituted ammonium;

B. from 0.01 to 1.5% by weight of ethylenediamine tetraacetic acid or alkali metal salt thereof;

C. from 1 to 30% by weight of at least one member selected from the group consisting of water-soluble anionic organic surfactant effective for washing hair and different from said anionic phosphoric acid ester, water-soluble nonionic organic surfactant effective for washing hair and water-soluble amphoteric organic surfactant effective for washing hair; and

D. the balance is essentially water.

4,259,205

PROCESS INVOLVING BREAKING OF AQUEOUS GEL OF NEUTRAL POLYSACCHARIDE POLYMER

Joseph R. Murphey, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Division of Ser. No. 840,083, Oct. 6, 1977, Pat. No. 4,199,484. This application Dec. 4, 1978, Ser. No. 966,186
Int. Cl.[3] B01D *17/00*
U.S. Cl. 252—326 15 Claims

1. A process of breaking an aqueous gel in which the gelling agent is a reducible polysaccharide comprising mixing with said gel in a quantity at least sufficient to break the gel viscosity below 10 centipoise an organic hydroperoxide, a salt capable of supplying cupric ion and a surfactant with a major portion of said surfactant being the amine quaternary type.

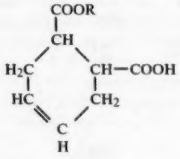
4,259,206

METAL WORKING LUBRICANT CONTAINING AN ALKANOLAMINE AND A CYCLOALIPHATIC ACID

Alfred B. Piotrowski, Woodbury, and Robert H. Davis, Pitman, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 22, 1979, Ser. No. 68,793
Int. Cl.[3] C10M *3/26, 3/04*
U.S. Cl. 252—34.7 10 Claims

1. An improved water-soluble composition suitable for preparing an aqueous lubricant, said composition comprising an alkanolamine and an organic acid, the improvement wherein the organic acid has the formula



wherein R is a cyclohexyl or benzyl group.

4,259,207

SUSPENDING MEDIUM FOR IMMUNOLOGIC REACTIONS

Mitchell J. Fruitstone; Michele M. Tilly, and Betty G. Pixton, all of Miami, Fla., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Sep. 19, 1979, Ser. No. 76,716
Int. Cl.[3] G01N *31/02, 33/16;* C09K *3/00*
U.S. Cl. 252—408 23 Claims

1. A suspending medium for an immunologic reaction, comprising gelatin, at a concentration of from about 0.5 wt. % to about 1.5 wt. %; albumin, at a concentration of from about 4.0 wt. % to about 6.0 wt. %; sufficient organic solute to provide an osmolality of from about 150 mOsm/kg. H_2O to about 450 mOsm/kg. H_2O; sufficient sodium chloride, potassium chloride, or a mixture thereof to provide an ionic strength equivalent to about a 0.01 molar to about a 0.10 molar solution of sodium chloride; and a pH from about 6.0 to about 8.0.

4,259,208

PROCESS FOR MAKING ALPHA-OLEFIN POLYMERS OR COPOLYMERS WITH HIGH ISOTACTICITY INDEX

Gilbert Marie, Pau, France, assignor to ATO Chemie, Paris, France

Division of Ser. No. 48,171, Jun. 13, 1979. This application Mar. 26, 1980, Ser. No. 134,270
Claims priority, application France, Jun. 21, 1978, 78 18530
Int. Cl.[3] C08F *4/64*
U.S. Cl. 252—429 B 14 Claims

1. A composition, suitable for use in a catalyst to polymerize alpha-olefins, containing a titanium chloride selected from the group consisting of titanium tetrachlorides and trichlorides, and an additive of the formula:

$$R_1—O—(C_pH_{2p})—S—R_2$$

wherein

p is an integer from 1 to 6,

R_1 and R_2 are independently selected alkyl radicals containing 1 to 4 carbon atoms, or are linked together to form a divalent $—(C_mH_{2m})—$ radical and wherein m is an integer from 1 to 6.

4,259,209

CATALYST FOR CONCENTRATING HYDROGEN ISOTOPES AND PROCESS FOR PRODUCING A SUPPORT THEREFOR

Ryohei Nakane; Shohei Isomura, both of Wako; Koichi Okita, Osaka; Eiji Kamijo, Osaka, and Tatsuya Nishimoto, Osaka, all of Japan, assignors to Rikagaku Kenkyusho, Saitama and Sumitomo Electric Industries, Ltd., Osaka, both of, Japan

Filed Apr. 30, 1979, Ser. No. 34,838

Claims priority, application Japan, Apr. 28, 1978, 53/52051; Apr. 28, 1978, 53/52054

Int. Cl.[3] B01J *31/06;* C01B *5/02*

U.S. Cl. 252—430 16 Claims

1. A catalyst for concentrating hydrogen isotopes for use in performing hydrogen isotope exchange between gaseous hydrogen and liquid water, said catalyst comprising a support of porous polytetrafluoroethylene having a total specific surface area of 2 to 80 m^2/g as a result of mixing therewith 0.5 to 15% by weight of a member selected from the group consisting of fluorocarbon, a porous styrene polymer and a porous styrene/-divinylbenzene copolymer having a specific surface area of at least 150 m^2/g, and, deposited on said support, particles of at least one element selected from the group consisting of elements of Group VIII of the Periodic Table.

4,259,210

CRYSTALLINE ALUMINO SILICATE-SILICA-ALUMINA GEL HYDROCARBON CONVERSION CATALYSTS AND PROCESSES FOR PRODUCING SAME

Hamid Alafandi, Woodland Hills, and Dennis Stamires, Newport Beach, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 3,793, Jan. 16, 1979, Ser. No. 935,628, Aug. 21, 1978, Ser. No. 874,755, Feb. 3, 1978, Pat. No. 4,198,310, Ser. No. 874,754, Feb. 3, 1978, and Ser. No. 769,118, Feb. 16, 1977, Pat. No. 4,142,995. This application Jun. 1, 1979, Ser. No. 44,677

The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.

Int. Cl.[3] B01J *27/24, 27/02, 29/06*

U.S. Cl. 252—438 9 Claims

1. The process of producing a cracking catalyst which comprises forming an ammoniated silica-alumina gel having an SiO_2/Al_2O_3 molar ratio of more than about one and less than about 3 and associated with sodium ions expressed as Na_2O of substantially less than about 1% based on the gel on a volatile free basis, mixing the same with a crystalline alumino silicate, and treating said ammoniated gel and said crystalline alumino silicate by heating said mixture in a solution containing monovalent cations other than alkali metal cations, or polyvalent cations, or both said cations and separating said mixture of said gel and crystalline alumino silicate.

4,259,211

CATALYST FOR THE OXIDATION OF ACROLEIN AND METHACROLEIN TO ACRYLIC ACID AND METHACRYLIC ACID, RESPECTIVELY

Richard Krabetz, Kirchheim; Walter Herrmann, Mannheim; Norbert Scholz, Ludwigshafen; Heinz Engelbach, Limburgerhof; Gerd-Juergen Engert, Frankenthal; Carl-Heinz Willersinn, Ludwigshafen; Gerd Duembgen, Dannstadt-Schauernheim, and Fritz Thiessen, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 800,722, May 26, 1977, abandoned. This application Nov. 24, 1978, Ser. No. 963,203

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1976, 2626887

Int. Cl.[3] B01J *23/22, 23/28, 23/30, 23/72*

U.S. Cl. 252—443 8 Claims

1. A catalyst for the gas phase oxidation of acrolein or methacrolein with an oxygen-containing gas to give acrylic acid or methacrylic acid, respectively, said catalyst comprising a premolded inert carrier having a rough surface which has been coated with an active catalyst composition of the formula $Mo_{12}A_aB_bC_cD_dO_x$, wherein:

A is a mixture of V and W;

B is copper or copper in a mixture with a metallic element selected from the group consisting of Fe, Mn, Ni, and Cr;

C is a metallic element selected from the group consisting of Nb, Ta, Bi, Sb, Sn, Th, Ce, and U;

D is a metallic element selected from the group consisting of Li, Na, K, Rb, Cs and Tl; and

a is from 0.5 to 12 for vanadium and from 0.2 to 6 for tungsten, the sum for vanadium and tungsten being from 2.5 to 18, b is from 0.5 to 8, the meaning of b for copper being 0.5 to 6, c is from 0 to 10, d is from 0 to less than 0.1 and x is from 41 to 127.75, said active catalyst composition being first manufactured, before its application to the carrier, from thermally easily decomposed salts of the metallic components by mixing aqueous solutions, slurries or moist solid masses of said easily decomposed salts, drying the mixture and calcining the dried composition at from 140° to 600° C., and said active catalyst composition in a particle size reduced to less than 150 micrometer then being applied together with water to the rough surface of the premolded carrier to form an active catalyst layer having a thickness of from 10 to 1,500 micrometer.

4,259,212

OCTANE IMPROVEMENT CRACKING CATALYST

Elroy M. Gladrow; William E. Winter, and William L. Schuette, all of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 913,480, Jun. 7, 1978, abandoned. This application Sep. 28, 1979, Ser. No. 80,146

Int. Cl.[3] B01J *29/08*

U.S. Cl. 252—455 Z 15 Claims

1. A cracking catalyst composition comprising discrete particles of ultra-stable Y zeolite and discrete particles of alumina, which particles are dispersed in a porous oxide matrix to produce a catalyst containing 5–40 wt.% ultra-stable Y zeolite, 5–40 wt.% alumina and 40–90 wt.% of porous oxide matrix.

13. A method for preparing a cracking catalyst which comprises:

(1) forming an aqueous slurry mixture containing (a) a porous oxide, (b) particles of alumina, and (c) particles of ultra-stable Y zeolite;

(2) drying said mixture to form a catalyst composite comprising discrete particles of ultra-stable Y zeolite and discrete particles of alumina which are dispersed in a porous oxide matrix;

(3) washing said catalyst composite to remove extraneous salts soluble in an aqueous ammonium salt solution; and

(4) drying the washed catalyst composite to reduce the moisture content thereof below 15 wt.%.

4,259,213

HIGH COPPER LEVEL COMULLED AND IMPREGNATED SULFUR SORBENT

Keith C. Bishop, III, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 23, 1979, Ser. No. 59,940

Int. Cl.[3] B01J *21/04, 23/72*

U.S. Cl. 252—463 4 Claims

1. A porous sulfur sorbent, prepared by the process which comprises:

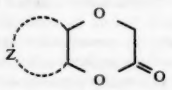
peptizing an alumina with acid; mulling the peptized alumina with a copper compound to form an extrudable dough; extruding the dough; drying and calcining the extrudate; impregnating the calcined extrudate with an aqueous solution of a copper compound and drying and calcining the impregnated extrudate.

4,259,214
BENZODIOXANONES AND ORGANOLEPTIC USES THEREOF

Mark A. Sprecker, Sea Bright; John B. Hall, Rumson, and Frederick L. Schmitt, Holmdel, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 75,071, Sep. 13, 1979. This application May 2, 1980, Ser. No. 145,986
Int. Cl.[3] C11B 9/00
U.S. Cl. 252—522 R 3 Claims

1. A process for augmenting or enhancing the aroma of a perfume comprising adding to a perfumed base an aroma augmenting or enhancing quantity of a cyclic chemical compound having the structure:



wherein Z is benzo or cyclohexano.

4,259,215
DETERGENT COMPOSITION CONTAINING A FABRIC SOFTENING CATIONIC SURFACTANT AND AN ETHER SULFATE HAVING A SPECIFIC OXYALKYLENE GROUP

Moriyasu Murata, Chiba, and Akira Suzuki, Funabashi, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1980, Ser. No. 158,437
Claims priority, application Japan, Jun. 29, 1979, 54-82185
Int. Cl.[3] C11D 1/65, 1/29
U.S. Cl. 252—528 9 Claims

1. A detergent composition for washing clothes and simultaneously imparting a fabric softening effect to the clothes, which consists essentially of:

from 0.5 to 20% by weight of cationic surfactant effective for imparting a fabric softening effect to clothes;

from 0.2 to 4 parts by weight, per one part by weight of said cationic surfactant, of one or a mixture of two or more surfactants having the formula

$$R—O—(A)_m—SO_3M$$

wherein

R is alkyl or alkenyl having from 8 to 22 carbon atoms;

A is selected from the group consisting of oxypropylene, oxybutylene and oxyethylene, and m is from 0.5 to 30 on the average, with the proviso that at least about 20% of the A units are oxypropylene, oxybutylene or mixture thereof; and

M is an alkali metal, alkaline earth metal or alkanolamine having 2 or 3 carbon atoms, the balance of the composition being conventional ingredients of liquid or granular detergent compositions.

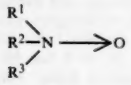
4,259,216
PROCESS FOR PRODUCING LIQUID DETERGENT COMPOSITION

Nobuyuki Miyajima, Tokyo; Nobuo Johna, Funabashi; Naoki Mizushima, Ichikawa, and Kazuo Ohbu, Tokyo, all of Japan, assignors to The Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1980, Ser. No. 131,637
Claims priority, application Japan, Oct. 11, 1979, 54/131199
Int. Cl.[3] C11D 1/14, 1/83, 11/00
U.S. Cl. 252—545 2 Claims

1. A process for producing a liquid detergent composition comprising the steps of:

(a) mixing an aqueous solution of at least one anionic surface active agent selected from the group consisting of the water-soluble salts of alpha-olefin sulfonic acids having 12 to 16 carbon atoms, and the water-soluble salts of polyoxyethylene alkylethersulfates having alkyl groups of 9 to 15 carbon atoms and an average of from 4 to 6 oxyethylene units with an aqueous solution of at least one alkylamine oxide having the formula.



wherein R^1 is an alkyl group of 10 to 14 carbon atoms, and R^2 and R^3 independently an alkyl or hydroxyalkyl group of 1 to 5 carbon atoms

(b) adding, to the mixture, at least one arylsulfonic acid selected from the group consisting of benzene sulfonic acid, toluene sulfonic acid, xylene sulfonic acid and cumene sulfonic acid in an amount of from 0.2 to 3.0% by weight, based on the total weight of the liquid composition containing from 6 to 25% by weight of said anionic surface active agent and from 2 to 8% by weight of said alkyl amine oxide.

4,259,217
LAUNDRY DETERGENT COMPOSITIONS HAVING ENHANCED GREASY AND OILY SOIL REMOVAL PERFORMANCE

Alan P. Murphy, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 884,466, Mar. 7, 1978, abandoned, which is a continuation-in-part of Ser. No. 852,187, Nov. 16, 1977, abandoned, which is a continuation-in-part of Ser. No. 811,220, Jun. 29, 1977, abandoned. This application Jun. 26, 1978, Ser. No. 919,181
Int. Cl.[3] C11D 1/38, 7/32
U.S. Cl. 252—547 37 Claims

1. A detergent composition, having a pH of at least about 6.5 in the aqueous laundry solution, being substantially free of oily hydrocarbon materials and cationic materials containing about 13 or more ethylene oxide groups, and containing from 0 to about 20% phosphate materials, consisting essentially of from about 5% to about 100% of a surfactant mixture consisting essentially of:

(a) a biodegradable nonionic surfactant having the formula

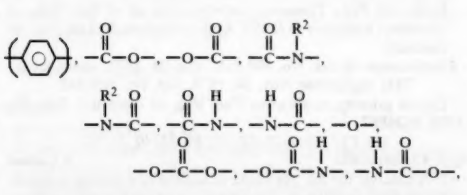
$$R(OC_2H_4)_nOH$$

wherein R is a primary or secondary alkyl chain of from about 8 to about 22 carbon atoms and n is an average of from about 2 to about 12, and having an HLB of from about 5 to about 17; and

(b) a cationic surfactant, free of hydrazinium groups, having the formula

$$R_m{}^1R_x{}^2Y_LZ$$

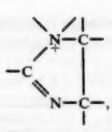
wherein each R^1 is an organic group containing a straight or branched alkyl or alkenyl group optionally substituted with up to 3 phenyl or hydroxy groups and optionally interrupted by up to 4 structures selected from the group consisting of



and mixtures thereof, each R^1 containing from about 8 to

about 22 carbon atoms, and which may additionally contain up to about 12 ethylene oxide groups; m is a number from 1 to 3; each R^2 is an alkyl or hydroxy alkyl group containing from 1 to 4 carbon atoms or a benzyl group, with no more than one R^2 in a molecule being benzyl; x is from 0 to 11, the remainder of any carbon atom positions being filled by hydrogens; Y is selected from the group consisting of

(1) ,

(2) 

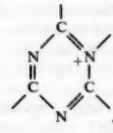
(3) ,

(4) ,

(5)
$(C_2H_4O)_pH$, wherein p is from 1 to 12,

(6)
$(C_2H_4O)_pH$, wherein each p is from 1 to 12,

(7) ,

(8)  , and

(9) mixtures thereof;

L is 1 or 2, the Y groups being separated by a moiety selected from the group consisting of R^1 and R^2 analogs having from one to about twenty-two carbon atoms and 2 free carbon single bonds when L is 2; Z is an anion in a number sufficient to give electrical neutrality to the molecule; said cationic surfactant being at least water-dispersible in admixture with said nonionic sufactant;

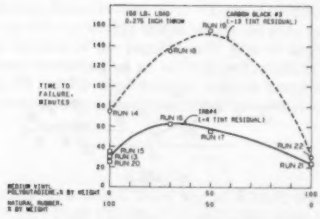
the ratio of said nonionic surfactant to said cationic surfactant being in the range of from 5.1:1 to about 100:1, and said mixture having a cloud point of from about 0° to about 95° C. and the balance being selected from the group consisting of: up to about 60% of a detergency builder selected from the group consisting of alkali metal carbonates, tetraborates, bicarbonates, perborates, tripolyphosphates, orthosphosphates, pyrophosphates, hexametaphosphates, silicates, and sulfates, organic alkaline detergency builder salts selected from the group consisting of sodium and potassium ethylenediaminetetraacetates, nitrilotriacetates, N-(2-hydroxyethyl)nitrilotriacetates, phytates, ethane-1-hydroxy-1,1-diphosphonates, ethylene diphosphonates, and mellitates and insoluble sodium aluminosilicates having the formula $Na_z(AlO_2)_z(SiO_2)_y.xH_2O$, wherein z and y are integers equal to at least 6, the molar ratio of z to y is in the range of from 1.0:1 to about 0.5:1, and X is an integer from about 15 to about 264, said aluminosilicates having a calcium ion exchange capacity of at least 200 milligrams equivalent/gram and a calcium ion exchange rate of at least about 2 grains/gallon/minute/gram; up to about 30% of sources of alkalinity selected from the group consisting of triethanolamine, diethanolamine and monoethanolamine; up to about 15% of a suds suppressor selected from the group consisting of long chain fatty acids, silicone suds suppressor additives, microcrystalline waxes, and alkyl phosphate esters; water; ethanol; isopropanol; urea; sodium chloride; and up to about 50% by weight of anionic detergents, zwitterionic detergents of mixtures thereof wherein the anionic detergents are selected from the group consisting of: alkali metal, ammonium, alkaline earth metal and alkanolammonium salts of higher fatty acids containing 8 to 24 carbon atoms, organic sulfuric reaction products containing from about 8 to about 22 carbon atoms in an alkyl group, from 0 to 30 ethoxy groups and a sulfonate or sulfate group, and up to about 10% by weight of the cationic surfactant of alkyl benzene sulfonates containing from 9 to 15 carbon atoms in the alkyl group, and wherein the zwitterionic surfactant contains an alkyl group with 8 to 18 carbon atoms, a quaternary ammonium, phosphonium or sulfonium group and wherein one of the substituents bears an anionic water solubilizing group; up to about 40% by weight of sodium toluene sulfonate by weight of the cationic surfactant; and mixtures thereof.

4,259,218

RUBBER COMPOSITIONS AND METHOD THEREFOR

John R. Haws, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 2, 1979, Ser. No. 473
Int. Cl.³ C08L 7/00; C08K 3/04
U.S. Cl. 260—5 **26 Claims**



1. A vulcanizable rubber composition comprising a rubber and a carbon black,

wherein the rubber is selected from the group consisting of polybutadiene having a vinyl content within the range from about 30 to about 80 mole percent and a blend of natural rubber and polybutadiene having a vinyl content within the range from about 30 to about 80 mole percent, and

wherein the carbon black has a tint residual less than about −6,

wherein tint residual (TR) of a carbon black is defined by the formula:

$$TR = T - [56.0 + 1.057(CTAB) - 0.002745(-CTAB)^2 - 0.2596(DBP) - 0.201(N_2SA - CTAB)],$$

wherein CTAB is the surface area in square meters per gram of the carbon black measured as described by J. Janzen and G. Kraus in Rubber Chemistry and Technology, 44, 1287(1971),

wherein N_2SA is the surface area in square meters per gram of the carbon black measured using nitrogen in accordance with ASTM method D 3037-71T,

wherein DBP is the structure of the carbon black in cubic centimeters per 100 grams and is measured in accordance with U.S. Pat. No. 3,548,454, and, after crushing, by method B in accordance with ASTM D 2414-70, and wherein DBP is also referred to as 24 M4 DBP, and

wherein T is the tint or tinting strength of the carbon black and is measured in accordance with ASTM 3265-75.

4,259,219

WATER-DILUTABLE LACQUERS AND THEIR USE IN BAKED COATINGS

Helmut Eschwey, and Manfred Gorzinski, both of Düsseldorf, Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Sep. 20, 1979, Ser. No. 77,307

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1978, 2845539

Int. Cl.[3] **C09D** *3/64, 3/80*

U.S. Cl. 260—22 A **8 Claims**

1. A water-dilutable lacquer based on carboxyl group containing alkyd or acrylate resins, wherein the carboxyl groups have been neutralized with an amine containing at least one 2,3-dihydroxy propyl group per amine nitrogen and having a boiling point above 200° C. at normal pressure.

4,259,220

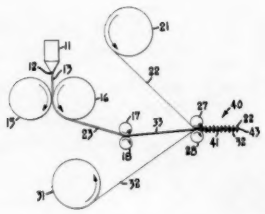
HOT MELT ADHESIVE FOR ELASTIC BANDING

William L. Bunnelle, Stillwater, and Richard C. Lindmark, Jr., Coon Rapids, both of Minn., assignors to H. B. Fuller Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 966,794, Dec. 6, 1978, abandoned. This application May 7, 1979, Ser. No. 36,858

Int. Cl.[3] **C08L** *93/00*

U.S. Cl. 260—27 BB **3 Claims**



1. A viscoelastic hot melt pressure-sensitive adhesive consisting essentially of:

(a) about 35 to about 55% by weight of a rubbery block copolymer which comprises a rubbery polyisoprene midblock portion and a plurality of end blocks comprising a crystalline poly(vinylarene);

(b) about 25 to 45% by weight of a terpene tackifying resin generally compatible with and generally associated with said midblock portion;

(c) about 10 to about 30% by weight of an aromatic, essentially hydrocarbon resin having a glass transition temperature and a softening point above about 115° C., said essentially hydrocarbon resin being generally compatible with said end blocks of said rubbery block copolymer;

the proportions of said components (a), (b), and (c) being selected to provide the following pressure-sensitive adhesive and rheological properties:

(i) a tensile strength at 500% elongation, determined at 20°–25° C., of at least 50 pounds per square inch;

(ii) a 180° peel resistance, according to PSTC-1, determined at 20°–25° C. 24 hours after formation of the pressure-sensitive adhesive bond, of at least about 1500 grams per 25.4 mm-width;

(iii) a dead load deformation, tested at room temperature, 37.8° C., 43.3° C., and 48.9° C. for 3 hours under 1500 g/cm^2, of less than 100%, where dead load deformation = the increased length minus the original length divided by the original length of a sample at least 25 mm in length;

(iv) the following loss modulus, storage modulus, and loss tangent values at 0.01 and 0.25 Hz throughout the temperature range of 25°–50° C.:

	0.01 Hz	0.25 Hz
loss modulus 10^4 dynes/cm^2	5–100	0–100
storage modulus, 10^4 dynes/cm^2	65–225	75–200
loss tangent	0.03–1.0	0.08–1.0

wherein the said values remain generally within the following limits, throughout said temperature range, at 0.25 Hz:

loss modulus	$\pm 70 \times 10^4$ dynes/cm^2
storage Modulus	$\pm 40 \times 10^4$ dynes/cm^2
loss tangent	± 0.6.

4,259,221

WATER-SOLUBLE POLYAMIDEIMIDES

Denis R. Pauze, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 753,653, Dec. 20, 1976, abandoned. This application Jul. 31, 1978, Ser. No. 929,367

Int. Cl.[3] **C08J** *3/06;* **C08L** *79/08*

U.S. Cl. 260—29.2 N **6 Claims**

1. The process of preparing a soluble cleaved polyamideimide containing coating composition which comprises reacting said polyamideimide with a tertiary amine to cleave at least part of the imide rings in a solvent containing water as a major constituent, said reacting being continued until a clear solution is obtained, wherein the quantity of said tertiary amine is more than sufficient to neutralize any free carboxyl groups present in said polyamideimide.

2. An aqueous polyamideimide coating composition prepared by means of the proces of claim **1**.

4,259,222

LINEAR SATURATED POLYESTERS OF PHOSPHORIC ACID AND HALOGENATED DIOLS AS FLAME-RETARDANT ADDITIVES AND COATINGS

Robert B. Login, and David D. Newkirk, both of Woodhaven, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Aug. 16, 1978, Ser. No. 933,986

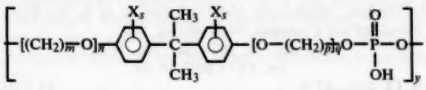
Int. Cl.[3] **C08G** *63/66, 63/68*

U.S. Cl. 260—29.2 E **10 Claims**

1. A water-dispersible or organic solvent soluble, cross-linking phosphorus- and halogen-containing, linear polymer useful as a flame-retardant additive for normally flammable polymers or as a coating for normally flammable natural and synthetic

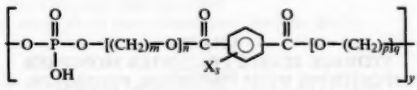
fibers, said linear polymer being selected from the group consisting of at least one of

A. a saturated polyester comprising the reaction product of a phosphorus acid reactant and either a halogenated bis-hydroxyalkyl aromatic diol or a non-oxyalkylated halogenated aromatic diol or mixtures thereof having the formula:



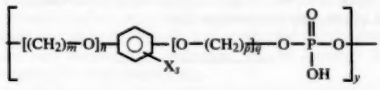
wherein X attached to the aromatic ring represents a halogen atom; s is an integer of 1 to 4; m and p are integers of 2 to 6; n and q are 0 or integers of 1 to 10; and y is an integer of 2 to 100;

B. a saturated polyester comprising the reaction product of a phosphorus acid reactant and a halogenated bis-hydroxyalkyl aromatic diacid having the formula:



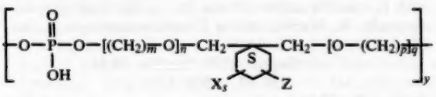
wherein said diacid is selected from the group consisting of phthalic, isophthalic, and terephthalic acids, phthalic anhydride, and esters thereof and wherein X attached to the aromatic ring represents a halogen atom selected from the group consisting of bromine, chlorine, and mixtures thereof; s is an integer of 1 to 4; m and p are integers of 2 to 6; n and q are integers of 1 to 10; and y is an integer of 2 to 100;

C. a saturated polyester comprising the reaction product of a phosphorus acid reactant and either a bis-hydroxyalkyl halogenated diphenol or a non-oxyalkylated halogenated dihydroxy benzene or mixtures thereof having the formula:



wherein the X attached to the aromatic ring represents a halogen atom selected from the group consisting of bromine, chlorine, and mixtures thereof; s is an integer of 1 to 4; m and p are integers of 2 to 6; n and q are 0 or integers of 1 to 10; and y is an integer of 2 to 100; and

D. a saturated polyester comprising the reaction product of a phosphorus acid reactant and either a halocyclohexane 1,1-dimethanol or oxyalkylated derivative thereof or mixtures thereof having the formula:



wherein the X attached to the saturated ring represents a halogen atom selected from the group consisting of chlorine, bromine and mixtures thereof; s is an integer of 1 to 2; Z represents hydrogen, an alkyl radical having 1 to 6 carbon atoms or phenyl; m and p are integers of 2 to 6; n and q are 0 or integers of 1 to 10; and y is an integer of 2 to 100.

4,259,223

CROSS-LINKED POLYVINYL PYRIDINE COATED GLASS PARTICLE CATALYST SUPPORT AND AQUEOUS COMPOSITION OR POLYVINYL PYRIDINE ADDUCTED MICROSPHERES

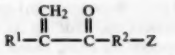
Alan Rembaum, Altadena; Amitava Gupta, Los Angeles, and Willi Volksen, Pasadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 780,007, Mar. 22, 1977, Pat. No. 4,170,685, which is a continuation-in-part of Ser. No. 671,058, Mar. 29, 1976, abandoned. This application Oct. 2, 1978, Ser. No. 947,516

Int. Cl.[2] **C08L** *23/32, 23/36;* **B01J** *31/02*

U.S. Cl. 260—29.6 H **9 Claims**

1. A composition comprising a suspension in aqueous acidic media of quaternized polymeric microspheres adducted to acid substituted natural biopolymer and organic fluorescent dyes containing a sulfonic or carboxyl group; said microspheres consisting essentially of discrete beads, at least 80% of which have a uniform diameter from 100 A to 60 microns having a surface area of at least 1 m^2/g and consisting essentially of addition copolymerized monomer mixture containing 70 to 80% vinyl pyridine, 10 to 30% of an addition copolymerizable, water soluble, monounsaturated comonomer selected from acrylamide, methacrylamide, acrylic acid, methacrylic acid or compounds of the formula:



where R^1 is hydrogen or lower alkyl of 1–8 carbon atoms; R^2 is alkylene of 1–12 carbon atoms and Z is —OH or

where R^3 or R^4 are individually selected from H, lower alkyl or lower alkoxy of 1–8 carbon atoms, and 5 to 30% of a water soluble, addition copolymerizable polyvinyl cross-linking agent, said beads including a hard, cross-linked hydrophobic vinyl pyridine copolymeric core and a hydrophilic, monounsaturated comonomer copolymeric sheath.

6. A catalyst support consisting essentially of a polymer coated porous glass particle having a diameter below 1000 microns, a pore diameter from 50 to 500 nm, a polymer to glass ratio of 1 to 40% by weight and in which the polymer is present on the surface of the particles as a film of agglomerated microspheres consisting of an addition polymerized polymer containing 70 to 80% vinyl pyridine and the remainder being water-soluble, addition copolymerizable polyvinyl cross-linking agent.

4,259,224

COPOLYMER SOLUTION OF ACRYLIC RESIN, PROCESS FOR ITS MANUFACTURE AND USE THEREOF IN REACTIVE LACQUERS

Horst Dalibor, Norderstedt; Hans-Joachim Kiessling, and Peter Quednau, both of Hamburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 25, 1977, Ser. No. 800,167

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1976, 2644691

Int. Cl.[3] **C08F** *220/18, 2/14, 4/38*

U.S. Cl. 260—31.2 XA **6 Claims**

1. A copolymer solution for use with polyisocyanates, consisting of

(A) 25 to 35% by weight of inert organic solvent and

(B) 65 to 75% by weight of copolymers which contain hydroxyl groups and have hydroxyl numbers of 130 to 200 and which are derived by polymerization in the presence of a mixture of perioxides from:

(a) 20 to 45% by weight of unsaturated polyesters based on dicarboxylic acids having acid numbers of 10 to 20 and having hydroxyl numbers of 100 to 250, obtained from 28 to 60 percent by weight of saturated dicarboxylic acids having 6 to 10 carbon atoms, 2 to 20 percent by weight of unsaturated dicarboxylic acids having 4 carbon atoms or the anhydrides thereof, being selected from the group consisting of maleic acid, maleic anhydride, fumaric acid and the partially or completely isomerized forms which are produced in the manufacturing process, starting from maleic acid or maleic anhydride, and diols having 2 to 15 carbon atoms, it being possible for the saturated dicarboxylic acids having 6 to 10 carbon atoms to be replaced, to the extent of up to 20%, by saturated, dimeric fatty acids which have 36 carbon atoms and contain two carboxyl groups, together with

(b) 55 to 80% by weight of a mixture of monomers composed of α,β-ethylenically unsaturated compounds, the said mixture consisting of

(b_1) 50 to 70% by weight of styrene and/or methyl methacrylate and

(b_2) 30 to 50% by weight of hydroxyethyl acrylate and/or hydroxyethyl methacrylate and/or hydroxypropyl acrylate and/or hydroxy-n-butyl acrylate, the components A and B, the components (a) and (b), the components in (a) and components (b_1) and (b_2) in the mixture (b) of monomers each adding up to 100% by weight, and the copolymers being based on such amounts of components (a) and (b) that they have hydroxyl numbers of 130 to 200.

4,259,225

COLORED POLYVINYL CHLORIDE PASTE COMPOSITION PREPARED USING PREMIXTURE OF PIGMENT AND AROMATIC CARBOXYLIC ACID ESTER

Isamu Saito, Toda; Koshiki Aoyagi, Ohmiya; Masatoshi Okumura, Kawaguchi; Masayoshi Banba, Ageo, and Naoki Shibahara, Takaishi, all of Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo, Japan

Filed Feb. 1, 1979, Ser. No. 8,589

Claims priority, application Japan, Feb. 3, 1978, 53-10518

Int. Cl.[3] C08K *5/12, 9/04;* **C09D** *17/00*

U.S. Cl. 260—31.8 B **12 Claims**

1. A colored polyvinyl chloride paste composition comprising

(B) a powdery premixture of (1) a pigment and (2) an aromatic carboxylic acid ester monomer which does not contain any recurring units in its molecular structure, said ester containing 1 to 6 ester bonds (—COO—) per molecule, having a molecular weight not exceeding 1,000 and having a melting point of at least 40° C., said powdery premixture being uniformly dispersed in

(A) a polyvinyl chloride paste selected from the group consisting of plastisol, organosol, plastigel and organogel.

4,259,226

SOLUTION OF FLUORINATED POLYMER HAVING CARBOXYLIC ACID SALT GROUPS IN POLAR HYDROXYLIC SOLVENT

Manabu Suhara, and Kiyotaka Arai, both of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Jan. 25, 1979, Ser. No. 6,876

Claims priority, application Japan, Feb. 14, 1978, 53-14958

Int. Cl.[2] C08K *5/05*

U.S. Cl. 260—33.4 F **6 Claims**

1. A solution of fluorinated polymer having less than 750 of an equivalent value of carboxylic acid groups of the formula

—COOM

wherein M represents an alkali metal atom or a metal atom in Group II*a* or II*b* of the periodic table or an ammonium group or an amine group, in a highly polar organic solvent consisting of monoalcohols or polyhydric alcohols.

4,259,227

POLYURETHANE COMPOSITIONS FOR TIRE SIDEWALLS AND COMPOSITE ARTICLES

Leo Ojakaar, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 21, 1979, Ser. No. 77,716

Int. Cl.[3] C08G *18/38*

U.S. Cl. 260—37 N **14 Claims**

1. A composition consisting essentially of a polyurethane made from 4,4'-methylenebis(cyclohexyl isocyanate) and one or more polyols in such proportions that the total amounts of isocyanate and hydroxyl functionalities are about equal, an adduct of 2 moles of N-(t-butyl)diethanolamine with 1 mole of an aliphatic diisocyanate, and bis (2,2'6,6'-tetramethyl-4-piperidine) sebacate.

4,259,228

STORAGE STABLE POLYESTER MONOMER COMPOSITIONS WITH INHIBITOR, PROMOTER, AND STABILIZER

Robert W. Smearing, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 21, 1979, Ser. No. 22,867

Int. Cl.[3] C08L *67/06*

U.S. Cl. 260—40 R **14 Claims**

1. A storage stable, fluent, ambient temperature, peroxide curable, polymerizable resin composition comprising:

(a) an unsaturated polymerizable polyester resin;

(b) a monomeric polymerizable ethylenic compound;

(c) a gelation inhibitor comprises p-benzoquinone, 1,4-naphthoquinone, hydroquinone, mono-t-butyl hydroquinone or a mixture thereof;

(d) a gelation promoter comprising a tertiary amine; and

(e) an effective, stabilizing amount of a copper compound which is soluble in said composition in combination with a quaternary ammonium salt.

4,259,229

PROCESS FOR PRODUCING COLORED POLYMER

Jury E. Nikitin, Revoljutsionnaya ulitsa 30/1, kv. 33; Jury I. Murinov, Revoljutsionnaya ulitsa 34, kv. 36; Gennady V. Leplyanin, ulitsa R. Zorge 31/2, kv. 14; Sagid R. Rafikov, ulitsa N. Mostovaya, 25, kv. 9; Lilia K. Bikchurina, prospekt Oktyabrya 133, kv. 25; Genrikh A. Tolstikov, prospekt Pushkina, 54, kv. 49; Valery P. Kazakov, ulitsa R. Zorge, 35/1, kv. 96; Edvard M. Battalov, ulitsa Frunze, 32; Vladimir S. Kolosnitsyn, Pervomaiskaya ulitsa, 10, kv. 47, all of Ufa; Lyalya N. Golodkova, prospekt Pobedy, 330, kv. 63, Chelyabinsk; Genrikh I. Izmailov, ulitsa Kirova, 86, kv. 48, Chelyabinsk, and Gennady K. Markin, ulitsa Krasnoznamennaya, 1, kv. 4, Chelyabinsk, all of U.S.S.R.

Filed May 16, 1979, Ser. No. 39,341

Int. Cl.[3] C08K *5/00*

U.S. Cl. 260—42.21 **5 Claims**

1. A process for producing a colored polymer, which comprises polymerizing a vinyl monomer in the presence of a radical initiator and a coloring agent which is a complex made by reacting a metal chloride or metal nitrate with organic compounds selected from the group consisting of an organic sulphoxide, tributylphosphate, trialkyl/aryl/phosphinoxide, and di-2-ethylhexylphosphoric acid.

4,259,230

POLYPROPYLENE COMPOSITIONS

Donald M. Simons, Wilmington, Del., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Sep. 26, 1979, Ser. No. 79,105
Int. Cl.[3] C08K *3/34*
U.S. Cl. 260—42.46 5 Claims

1. A polypropylene composition having an impact strength of at least 50 j/m in ASTM test D-256, a flex modulus of at least 1.3 GPa in ASTM test D-790, and a V-0 rating in Underwriters Laboratories ignition test UL-94, said composition consisting essentially of the following components, in parts by weight:

(1) about 20–60 parts of a propylene/ethylene block copolymer containing 10 to 30 weight percent of propylene and 70 to 90 weight percent of ethylene,

(2) about 20–50 parts homopolypropylene;

(3) about 20–30 parts of an EPM or EPDM elastomer having an ethylene content of about 50–65 weight percent and a Mooney viscosity of about 35–80;

(4) about 25–40 parts of mica;

(5) about 54–60 parts of 1,2,3,4 7,8,9,10,13,13,14,14-dodecachloro-1,4,4*a*,6*a*,7,10,10*a*,12*a*-octahydro-1,4:7,10-dimethanodibenzocyclooctane; and

(6) about 27–30 parts of antimony trioxide, Sb_2O_3.

4,259,231

ONE-PART CURABLE ELASTIC SEALANT

Takanori Tomomoto; Kihachi Suzuki; Shin-ichi Oda, and Toshimitsu Okuno, all of Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaraki, Japan

Filed Apr. 19, 1979, Ser. No. 31,700
Claims priority, application Japan, Apr. 19, 1978, 53-46878
Int. Cl.[3] C08K *5/16;* C08G *18/12*
U.S. Cl. 260—42.52 20 Claims

1. A one-part curable elastic sealant comprising a dehydrated blend of

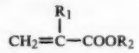
(I) 100 parts by weight of an acrylic isocyanate elastomer having free isocyanate groups in the molecules,

(II) about 0.1 to 15 parts by weight of a reaction promoting catalyst, and

(III) about 30 to 200 parts by weight of a filler; said acrylic isocyanate elastomer being the rection product of an acrylic low molecular weight copolymer with about two equivalents of an organic diisocyanate based on the functional groups in the acrylic low molecular weight copolymer, said acrylic low molecular weight copolyer being prepared by copolymerizing

(a) an ethylenically unsaturated monomer having a functional group capable of reacting with an organic diisocyanate compound, with

(b) an unsaturated monomer of the general formula



wherein R_1 represents a hydrogen atom or a methyl group, and R_2 represents a straight or branched chain alkyl group having 2 to 14 carbon atoms, in the presence of a polymerization initiator having a functional group whose reactivity with the isocyanate compound is equal to or higher than that of the functional group of the monomer (a), and/or a chain transfer agent similarly having a functional group whose reactivity with the isocyanate compound is equal to or higher than that of the functional group of monomer (a), the mole ratio of monomer (a) to monomer (b) being about 1:5 to 1:500, and the amount of said polymerization initiator and/or chain transfer agent being about 0.1 to 20 parts by weight per 100 parts of weight of monomer (b), said acrylic low molecular weight copolymer having an average of about one functional group derived from said polymerization initiator and/or chain transfer agent at the end of the polymer molecule and an average of about one functional group derived from monomer (a) at an arbitrary position within the polymer molecule, both of these functional groups being capable of participating in the reaction with the isocyanate compound.

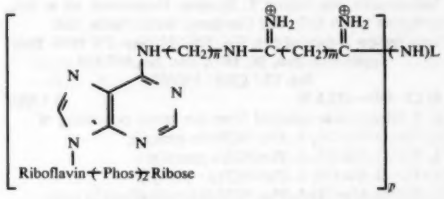
4,259,232

FLAVIN ADENINE DINUCLEOTIDE-LABELED PROTEIN AND POLYPEPTIDE CONJUGATES

Robert J. Carrico, and That T. Ngo, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Oct. 23, 1979, Ser. No. 87,521
Int. Cl.[3] C07G *7/00;* C07C *103/52*
U.S. Cl. 260—112 R 11 Claims

1. A flavin adenine dinucleotide-labeled conjugate of the formula:



wherein Riboflavin —$(Phos)_2$ Ribose represents the riboflavin-pyrophosphate-ribose residue in flavin adenine dinucleotide, —NH)L is a protein or polypeptide bound through an amino group thereof whereby said protein or polypeptide in the conjugate is capable of being bound by an antibody, n is an integer from 2 through 10, m is an integer from 1 through 10, and p is on the average from 1 to the number of available amino groups in L.

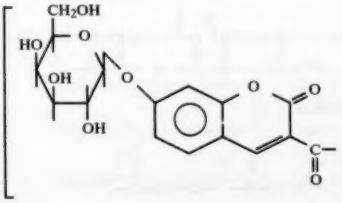
4,259,233

β-GALACTOSYL-UMBELLIFERONE-LABELED PROTEIN AND POLYPEPTIDE CONJUGATES

Robert J. Carrico, and That T. Ngo, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Oct. 23, 1979, Ser. No. 87,522
Int. Cl.[3] C07G *7/00, 3/00;* C07C *103/52*
U.S. Cl. 260—112 B 11 Claims

1. A β-galactosyl-umbelliferone-labeled conjugate of the formula:



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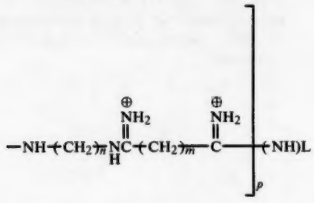


wherein —NH)L is a protein or polypeptide bound through an amino group thereof whereby said protein or polypeptide in the conjugate is capable of being bound by an antibody, n is an integer from 2 through 10, m is an integer from 1 through 10, and p is on the average from 1 to the number of available amino groups in L.

4,259,234

ANALGESIC COMPOUNDS

Edward L. Smithwick, Jr.; Robert C. A. Frederickson, both of Indianapolis, and Robert T. Shuman, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 726,724, Sep. 27, 1976. This application Jun. 20, 1977, Ser. No. 807,849

Int. Cl.[3] **C07C** *103/52*

U.S. Cl. 260—112.5 R **1 Claim**

1. A tetrapeptide selected from the group consisting of H-L-Tyr-D-Ala-Gly-L-Phe-N(Me)(n-pentyl); H-L-Tyr-D-Ala-Gly-L-Phe-NH(n-pentyl); H-L-Tyr-D-Ala-Gly-L-Phe-N(Pr)(n-pentyl); H-L-Tyr-D-Ala-Gly-L-Phe-N(Me)(3-methylbutyl); or H-L-Tyr-D-Ala-Gly-L-Phe-N(Pr)(3-methylbutyl).

4,259,235

TRICYCLIC NITROGENOUS COMPOUNDS HAVING STRING PLANT GROWTH REGULATING PROPERTIES

Rolf Platz, Mannheim; Werner Fuchs, Ludwigshafen; Norbert Rieber, Mannheim; Johann Jung, and Bruno Wuerzer, both of Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

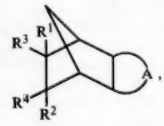
Filed Sep. 11, 1978, Ser. No. 941,010

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1977, 2742034

Int. Cl.[3] **C07C** *107/04, 229/00, 261/08;* **C07D** *261/20*

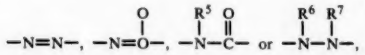
U.S. Cl. 260—152 **2 Claims**

1. A compound of the formula

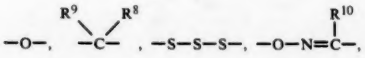


where R^3 and R^4 are either individual radicals or together form the radical $(B)_n$,

A denotes the radical



B denotes the radical



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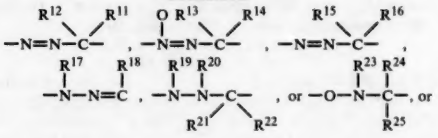
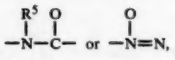
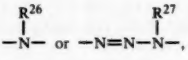


when A is

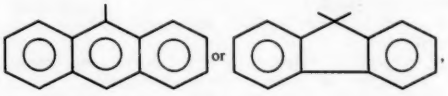


B also denotes the radical

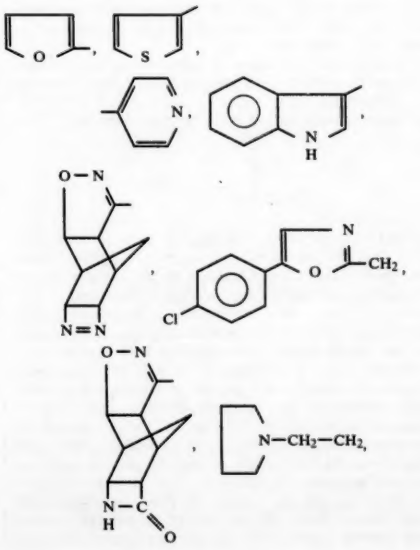


n is one of the integers 0 and 1,

R^1 to R^{27} are identical or different and each denotes hydrogen, with the exception of R^3 and R^4, or alkyl, with the exception of R^6 and R^7 and with the proviso that R^3 and R^4 do not simultaneously denote alkyl, alkenyl or alkynyl of 1 to 30 carbon atoms, phenyl, naphthyl, or the aromatic radical



a heterocyclic radical selected from the group consisting of



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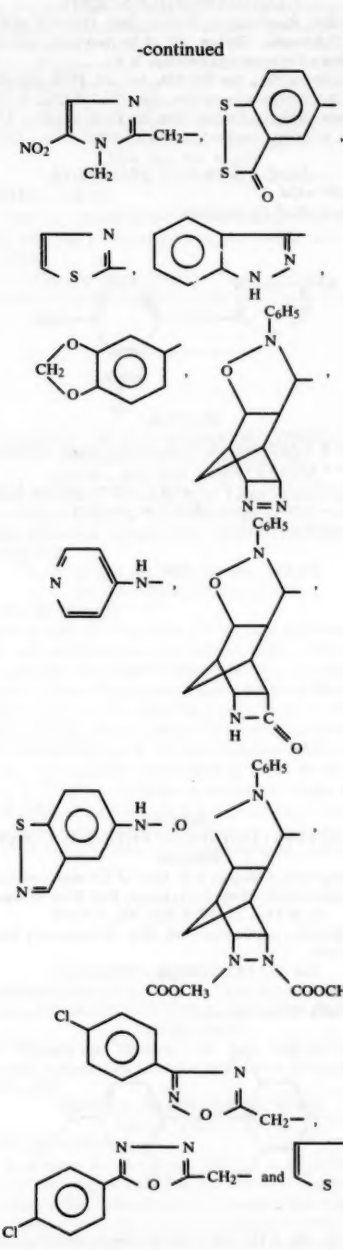
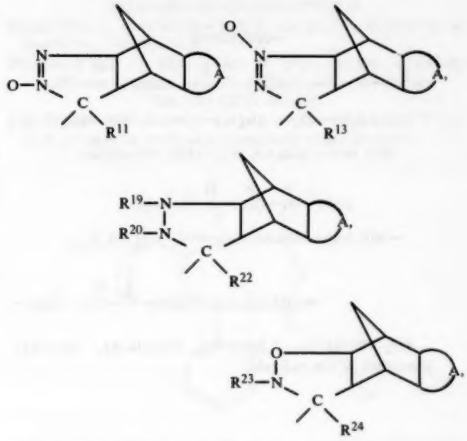
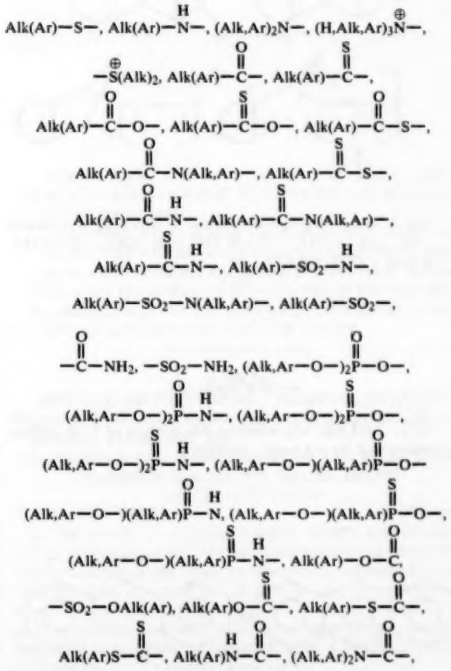


aralkyl or alkyl substituted by one of said heterocyclic radicals; the abovementioned radicals R^1 to R^{27}, apart from hydrogen, being unsubstituted or mono- or polysubstituted by halogen, azide, cyanide, cyanate, thiocyanate, —OH, —SH, —NO_2,



further, R^1 and R^7 are also selected from the group consisting of halogen, —N_3, —CN, —OCN, —SCN, —OH, —SH, —NO_2, —NH_2, —NO,

—N(H,Alk)—N(H,Alk,Ar_2), —COOH or —SO_3H or salts thereof, —SO_2Cl, Alk(Ar)—O—,



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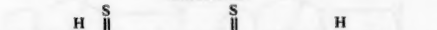
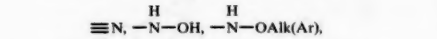


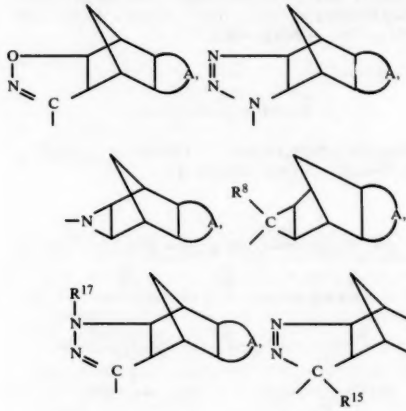
$(Alk,Ar)_2N-SO_2-$, $Alk(Ar)-N=N-$, $=N-OH$,

$=O$, $=N-Oalk(Ar)$, $=S$, $=NH$, $=NAlk(Ar)$,

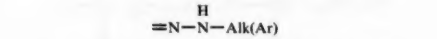


$-N(H,Alk)-N(H,Alk,Ar)_2$, $=N-N(H,Alk,Ar)_2$,

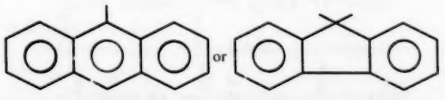
$-SO_2-$**0**$Alk(Ar)-$, haloalkyl, haloalkoxy, haloalkylmercapto or the radicals



and R^1 and R^3 together, or R^2 and R^4 together, also denote $=O$, $=S$, $=NH$, $=NAlk(Ar)$, $=N-OH$, $=N-OAlk(Ar)$, $=C(H,Alk,Ar)_2$,



$=N-N(H,Alk,Ar)$, wherein Alk is alkyl of 1-30 carbon atoms and Ar is phenyl, naphthyl,



4,259,236

AZO COMPOUNDS, CONTAINING A 1,2,4-THIADIAZOLE MOIETY

Stefan Koller, Ramlinsburg; Rudolf Zink, Oberwil, and Hansrudolf Schwander, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

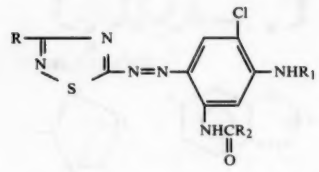
Continuation of Ser. No. 899,934, Apr. 25, 1978, abandoned, which is a continuation of Ser. No. 702,174, Jul. 2, 1976, abandoned. This application Feb. 26, 1979, Ser. No. 15,511

Claims priority, application Switzerland, Jul. 18, 1975, 9439/75

Int. Cl.[3] **C09B** *29/22, 29/36, 31/14*

U.S. Cl. 260—156 **11 Claims**

1. A dyestuff of the formula



wherein R is hydrogen, methyl, ethyl, chloro, phenyl, pyridyl or C_1–C_4-alkylthio;

R_1 is C_1–C_4-alkyl or C_1–C_4-alkyl substituted by hydroxy, C_1–C_4-alkoxy, chloro, phenyl or phenoxy;

R_2 is methyl or ethyl.

4,259,237

AZO DYESTUFFS CONTAINING PHENOLIC COUPLING GROUP

Rainer Hamprecht, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

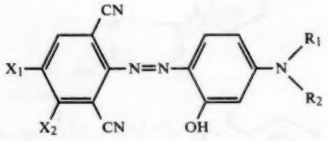
Filed Dec. 28, 1978, Ser. No. 974,018

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2759103

Int. Cl.[3] **C07C** *107/06;* **C09B** *29/12*

U.S. Cl. 260—206 **8 Claims**

1. Dyestuffs of the formula



wherein

X_1 = Cl, F, Br, CH_3, CF_3, C_1–C_8-alkoxycarbonyl, acetyl, benzoyl. methylsulfonyl-

X_2 = H or CH_3

R_1 = benzyl, methylbenzyl, phenyl, chlorophenyl, $C_2H_4OC_2H_4CN$, $C_2H_4OCOCH_3$, $C_2H_4OCONHC_4H_9$,

R_2 = C_2H_4CN, benzyl, $C_2H_4OC_2H_4CN$, $C_2H_4OCOCH_3$, $C_2H_4OCONHC_4H^9$ or H.

4,259,238
N-PHENYL AMIDINES

Yao H. Wu, and Walter G. Lobeck, Jr., both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Division of Ser. No. 818,623, Jul. 25, 1977, Pat. No. 4,196,212, which is a division of Ser. No. 609,885, Sep. 2, 1975, Pat. No. 4,049,714, which is a division of Ser. No. 466,753, May 3, 1974, abandoned, which is a continuation of Ser. No. 255,701, May 22, 1972, Pat. No. 3,816,454, which is a continuation of Ser. No. 47,589, Jun. 18, 1970, abandoned. This application Nov. 19, 1979, Ser. No. 95,891

Int. Cl.[3] A61K *31/395;* C07D *225/00*

U.S. Cl. 260—239 BE 4 Claims

1. 4,5,6,7,8,9-Hexahydro-2-(N-phenylphenethylamino)-3H-azonine and the pharmaceutically acceptable acid addition salts thereof.

3. 2-(N-Phenylphenethylamino)-1-aza-1-cyclotridecene and the pharmaceutically acceptable acid addition salts thereof.

4,259,239
RESOLUTION OF ENANTIOMERIC COMPLEXES OF NICKELOUS CHLORIDE AND ALPHA-AMINOCAPROLACTAM

Stylianos Sifniades, Madison; Meir Lahav, Berkeley Heights, and William J. Boyle, Jr., Warren, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Apr. 21, 1980, Ser. No. 142,530

Int. Cl.[3] C07D *223/10, 223/12*

U.S. Cl. 260—239.3 R 4 Claims

1. In a process for resolution of a mixture of D- and L-forms of the tris (alpha-aminocaprolactam)/$NiCl_2$. ROH enantiomeric complex—wherein R is methyl, ethyl, or isopropyl—to increase the ratio of one form of said complex in the crystalline product obtained, as compared to the ratio in the starting material, which process comprises forming a supersaturated solution of said complex; the improvement which comprises including one optically active form of lysine in said solution, namely L-lysine as crystallization inhibitor of the D-form of said complex when the L-form is desired and D-lysine when the D-form of the complex is desired; and crystallizing a portion of the complex from said supersaturated solution.

4,259,240
SYNTHESIS OF FURYL INTERMEDIATES, AND CARDENOLIDES AND THEIR ISOMERS PREPARED THEREFROM

Karel Wiesner, and Thomas Y. R. Tsai, both of Fredericton, Canada, assignors to Advance Biofactures Corporation, Lynbrook, N.Y.

Filed Sep. 28, 1979, Ser. No. 80,004

Int. Cl.[3] C07J *71/00*

U.S. Cl. 260—239.55 R 18 Claims

1. A process for the preparation of a 17 β-furyl, 15 β-hydroxyl intermediate suitable for the total synthesis of cardenolides or their isomers which comprises the steps of:

(a) reacting an α,βunsaturated steroidal 17 ketone with an alkali or alkaline earth metal β-furyl compound to form a CD-trans-oid allylic alcohol;

(b) acetylating said alcohol and subjecting the resulting acetate to a stereospecific allylic rearrangement to produce a CD-trans-oid 15 β-hydroxyl compound;

(c) hydrogenating said 15 β-hydroxyl compound to form the 17 β-furyl, 15 β-hydroxyl intermediate.

4,259,241
PROCESS FOR THE PREPARATION OF IMIDAZOBENZODIAZEPINES

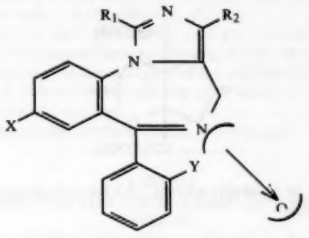
Armin Walser, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 43,417, May 29, 1979, Pat. No. 4,226,768. This application Feb. 21, 1980, Ser. No. 123,318

Int. Cl.[3] C07D *487/04*

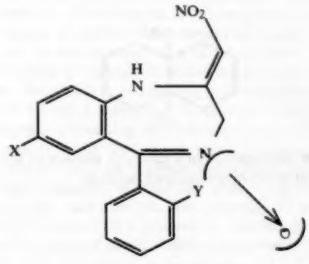
U.S. Cl. 260—243.3 1 Claim

1. A process to produce a compound of the formula



wherein X is selected from the group consisting of hydrogen, halogen, nitro and trifluoromethyl; Y is selected from the group consisting of hydrogen, halogen or trifluoromethyl; R_1 is hydrogen or lower alkyl and R_2 is diloweralkylamino, dibenzylamino or morpholino which comprises

A. reacting a compound of the formula



wherein X and Y are as above with a nitrosating agent,

B. alkylating the product of (A) by reaction with diazomethane or diazoethane,

C. nucelophilically displacing the nitro group of the product of (A) or (B) with ammonia, a primary or secondary amine or an alkali metal salt of a primary or secondary amine,

D. reacting the product of (C) with sodium borohydride,

E. reacting the product of (D) with formaldehyde or acetaldehyde in the presence of an acid catalyst.

4,259,242
METHOD OF PREPARING VINDESINE SULFATE

Stanislaw Rolski, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 949,595, Oct. 10, 1978. This application Dec. 11, 1979, Ser. No. 102,505

Int. Cl.[3] C07D *519/04*

U.S. Cl. 260—244.4 5 Claims

1. The process of preparing a stable, rapidly soluble sulfate salt of vindesine suitable for use in intravenous administration which comprises the steps of dissolving substantially pure vindesine base in acetonitrile or acetone at a concentration of about 1% and then adding thereto an equivalent amount of 1 N aqueous sulfuric acid with stirring at a rate such as to minimize formation of vindesine disulfate to yield a product which is substantially pure vindesine monosulfate.

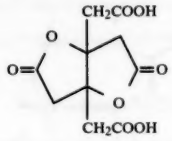
4,259,243

PROCESS FOR THE PREPARATION OF 2,5-DIOXO-3H, 6H-FURO(3,2-B)FURAN-3A,6A-DIACETIC ACID

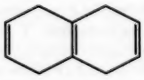
James E. Slager, Union, and Charles E. Brothers, Cassopolis, both of Mich., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jan. 9, 1980, Ser. No. 110,638
Int. Cl.³ C07D *493/04*
U.S. Cl. 260—343.6 **9 Claims**

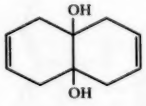
1. A method for the preparation of 2,5-Dioxo-3H,6H-furo[3,2-b]furan-3a,6a-diacetic acid of the formula:



by reacting, in a suitable solvent 1,4,5,8-tetrahydronapthalene of the formula:



or 9,10-dihydroxy-1,4,5,8-tetrahydronapthalene of the formula:



with IO_4^- in the presence of a catalytic amount of RuO_2 for a time sufficient to form the desired product.

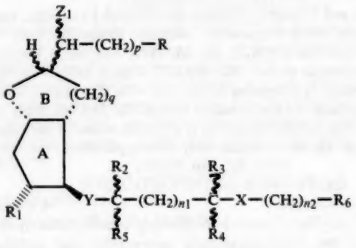
4,259,244

CERTAIN 13,14-DIDEHYDRO-PGI$_1$ COMPOUNDS

Carmelo Gandolfi, Milan; Carlo Passarotti, Gallarate; Alessandro Andreoni, Cologno Monzese; Angelo Fumagalli, Monza; Franco Faustini, Milan; Roberto Ceserani, Milan, and Maria M. Usardi, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

Division of Ser. No. 928,809, Jul. 28, 1978, which is a division of Ser. No. 859,703, Dec. 12, 1977, abandoned. This application Apr. 13, 1979, Ser. No. 29,922
Claims priority, application Italy, Dec. 31, 1976, 31401 A/76; Jan. 14, 1977, 19283 A/77; Mar. 14, 1977, 21171 A/77; Mar. 21, 1977, 21412 A/77; Mar. 31, 1977, 21863 A/77
Int. Cl.³ A61K *31/557*; C07D *307/935*
U.S. Cl. 260—346.22 **26 Claims**

1. A compound of formula (I)



(I)

wherein

R is —COOR$_c$ where R$_c$ is H, C$_1$–C$_{12}$ alkyl or C$_2$–C$_{12}$ alkenyl;

Z_1 is hydrogen;

p is zero or an integer of 1 to 7;

q is 1;

R$_1$ is C$_1$–C$_6$ alkoxy, or benzyloxy;

Y is —C≡C—;

one of R$_2$ and R$_5$ is hydrogen, C$_1$–C$_6$ alkyl, C$_2$–C$_6$ alkenyl, C$_2$–C$_6$ alkenyl or phenyl, α-naphthyl or β-naphthyl, and the other is hydroxy, C$_1$–C$_6$ alkoxy, or benzyloxy, or R$_2$ and R$_5$, taken together form an oxo group; each of R$_3$ and R$_4$, which are the same or different, may be hydrogen, C$_1$–C$_6$ alkyl or fluorine or R$_3$ and R$_4$, taken together with the carbon atom to which they are linked, form the radical

or the radical

each of n$_1$ and n$_2$, which are the same or different, is zero or an integer of 1 to 6;

X is —(CH$_2$)$_m$— wherein m is zero or 1;

R$_6$ is a member selected from the group consisting of

(a') hydrogen and

(b') C$_1$–C$_4$ alkyl;

and the pharmaceutically or veterinarily acceptable salts.

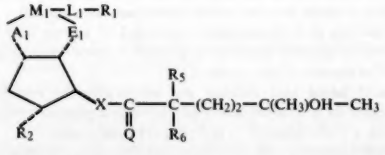
4,259,245

19-HYDROXY-19-METHYL-6-HYDROXY-PGI$_1$ COMPOUNDS

John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

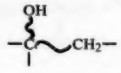
Division of Ser. No. 54,720, Jul. 5, 1979, Pat. No. 4,225,507. This application Mar. 3, 1980, Ser. No. 126,502
Int. Cl.³ C07D *307/935*
U.S. Cl. 260—346.22 **5 Claims**

1. A prostacyclin-type compound of the formula



wherein A$_1$ is —O— (oxa) and E$_1$ is —CH$_2$;

wherein L_1 is
(1)—$(CH_2)_n$—, wherein n is one to 5, inclusive,
(2)—$(CH_2)_p$—CF_2—, wherein p is 2, 3, or 4, or
(3) —CH_2—CH=CH—;
wherein M_1 is



wherein Q is oxo, α-H:β-H, α-OH:β-R_4, or α-R_4:β-OH,
wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,
wherein R_1 is
(1) —$COOR_3$,
(2) —CH_2OH,
(3) —$CH_2N(R_7)(R_8)$,
(4) —CO—$N(R_7)(R_8)$,
(5) —CO—NH—SO_2—R_{15}, or
(6) tetrazolyl,
wherein R_3 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;
(g) —(p—Ph)—CO—CH_3,
(h)—(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{16},
wherein —(Ph)— is phenylene and —(Ph) is phenyl;
wherein R_{16} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation; wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different, and wherein R_{15} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, phenyl, phenyl-substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive, wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro, and
wherein X is
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) —C≡C—, or
(4) —CH_2CH_2—.

4,259,246

MALEIC ANHYDRIDE PRODUCTION WITH RECYCLE TREATMENT

Kiran R. Bakshi, El Cerrito; David M. Marquis, Lafayette, and Stephen G. Paradis, Fairfax, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 645,584, Dec. 31, 1975, abandoned. This application Oct. 15, 1979, Ser. No. 84,978

Int. Cl.[3] **C07D** *307/60*

U.S. Cl. 260—346.75 **4 Claims**

1. A process for producing maleic anhydride from a C_4 hydrocarbon selected from n-butane and n-butene feed which comprises:
(a) feeding the C_4 hydrocarbon and air to a reactor;
(b) contacting the C_4 hydrocarbon and air in the reactor with a catalyst comprising vanadium and phosphorus oxides, said vanadium having an average valence in the range from about +3.9 to 4.6, and said oxides having a phosphorus-to-vanadium atomic ratio in the range from about 0.9–1.8 to 1, at reaction conditions including a temperature between 550° and 1000° F. so as to obtain a reactor effluent containing maleic anhydride, unreacted C_4 hydrocarbon, nitrogen, oxygen, and acrylic, acetic or maleic acid or mixtures of the foregoing acids;
(c) removing maleic anhydride from the reactor effluent to obtain maleic anhydride-lean effluent;
(d) removing said acids from at least a portion of the maleic anhydride-lean effluent to obtain a purified recycle stream containing less than 100 ppm of the acids by scrubbing the maleic anhydride-lean effluent with water or an aqueous solution of base; and
(e) recycling the purified stream to the reactor.

4,259,247

PROCESS FOR THE PRODUCTION OF ETHYLENE OXIDE

Nazim M. Guseinov, ulitsa Gusi-Gadzhieva, 3, kv. 12, Baku, U.S.S.R.

Continuation of Ser. No. 607,815, Aug. 25, 1975, abandoned. This application Mar. 25, 1977, Ser. No. 781,495

Int. Cl.[3] **C07D** *301/10*

U.S. Cl. 260—348.35 **1 Claim**

1. A process for the production of ethylene oxide, which comprises subjecting ethylene to oxidation with oxygen in the presence of carbon dioxide, said components which are in a volume ratio of 5–15 ethylene to 10–15 oxygen to 75–85 carbon dioxide forming an upward flow moving at a speed of from 10 to 12 m/sec, in the presence of a silver catalyst on a carrier likewise forming an upward flow moving at a speed of from 4 to 6 m/sec, the reaction proceeding at a temperature of from 290° to 300° C. and a pressure of from 35 to 50 atm to yield a reaction mixture containing the desired product, the unreacted ethylene and the unreacted oxygen; and recovering the desired product from said mixture, wherein said catalyst on the carrier, prior to said oxidation, is saturated with oxygen by passing oxygen through said catalyst, the quantity of said oxygen accounting for from 1 to 5 percent by volume of the overall amount of the mixture of the starting components.

4,259,248

PROCESS FOR THE PREPARATION OF MIXTURES OF DINITROANTHRAQUINONES WITH A HIGH CONTENT OF 1,5- AND 1,8- DINITROANTHRAQUINONE

Walter Hohmann, and Klaus Wunderlich, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 825,002, Aug. 16, 1977, abandoned. This application Jun. 18, 1979, Ser. No. 49,708

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1976, 2637732

Int. Cl.[3] **C07C** *97/12*

U.S. Cl. 260—369 **8 Claims**

1. In the process for the preparation of a mixture of a dinitroanthraquinones having an at least 73% content of 1,5- and 1,8-dinitroanthraquinone relative to anthraquinone and/or 1-nitroanthraquinone employed, wherein anthraquinone, 1-nitroanthraquinone, a mixture of anthraquinone and 1-nitroanthraquinone, or a 1-nitroanthraquinone, which contains impurities such as anthraquinone, 2-nitroanthraquinone, dinitroanthraquinone and which is obtained during the production of 1-nitroanthraquinone, are nitrated with nitric acid with heating, the improvement which comprises (a) adding said anthraquinone, 1-nitroanthraquinone, mixture of anthraquinone and 1-nitroanthraquinone, or said 1-nitroanthraquinone, containing impurities such as anthraquinone, 2-nitroanthraquinone, dini-

troanthraquinones and obtained during the production of 1-nitroanthraquinone to a mixture of sulfuric acid and nitric acid having a weight ratio of H_2SO_4: NHO_3 from 0.75 to 2:1 calculated on the basis of 100% acids, at 20° to 50° C., so that the weight ratio of nitric acid to solids is 1.5 to 2.5:1, (b) maintaining the mixture at said 20° to 50° C. temperature until more than 50% of the anthraquinoid starting compounds are dinitrated, then (c) raising the reaction temperature to 50° to 70° C. so that the temperature is at least 5° C. higher than that in step (a), then maintaining the latter reaction temperature until anthraquinone and nitroanthraquinone have disappeared or can be detected only in insignificant amounts.

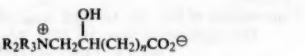
4,259,249

PREPARATION OF HYDROXYL ZWITTERIONIC COMPOUNDS

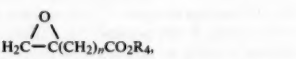
Charles R. Degenhardt, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 13, 1979, Ser. No. 48,203
Int. Cl.[3] C07C *101/12;* C09F *7/00*
U.S. Cl. 260—404 **8 Claims**

1. A one-step process for directly preparing hydroxyl ammonio carboxylates of the general formula



wherein R_1, R_2 and R_3 are each hydrocarbyl moieties and n is an integer which is 0 or 2 to about 10, comprising reacting an epoxy alkanoate ester of the formula



wherein n is as before, and R_4 is selected from a group consisting of methyl, ethyl and propyl hydrocarbyl groups with a tertiary amine of the formula $R_1R_2R_3N$ in an aqueous organic reaction solvent, said process being carried out without a separate de-esterification step for removing R_4.

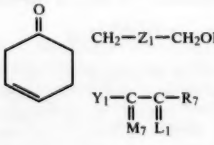
4,259,250

11A-HOMO-PG INTERMEDIATES FOR PREPARING 11A-METHANO TXA_2 COMPOUNDS

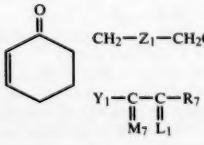
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 035,143, May 1, 1979, Pat. No. 4,218,378. This application Jan. 28, 1980, Ser. No. 116,077
Int. Cl.[3] C09F *7/00;* C11C *3/00;* C09F *5/08;* C11C *1/00*
U.S. Cl. 260—408 **1 Claim**

1. A thromboxane intermediate of formula V, VI, VII or VIII,

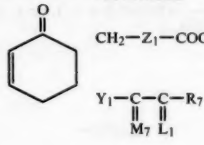


V

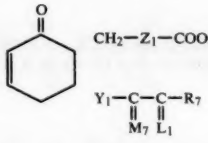


VI

-continued



VII



VIII

wherein M_7 is α-R_5:β-OR_{10}, α-OR_{10}:βR_5, or α-H:β-H, wherein R_5 is hydrogen or methyl and R_{10} is a stable, acid hydrolyzable blocking group;

wherein R_{12} is alkyl of one to 12 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive; phenyl; or phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms;

wherein Y_1 is

(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) —CH_2CH_2—, or
(4) —C≡C—,

wherein L_1 is α-R_3:β-R_4, α-R_4:β-R_3, or a mixture of α-R_3:β-R_4 and β-R_3:α-R_4, wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro,

wherein Z_1 is

(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,
(7) —$(CH_2)_2$—O—$(CH_2)_g$—CH_2—, or
(8) trans—CH_2—$(CH_2)_g$—CH_2—CH=CH—;
(9) —(m-Ph)—O—$(CH_2)_g$—, or
(10) —(m-Ph)—CH_2—$(CH_2)_g$—,

wherein g is one, 2, or 3 and -(m-Ph)- is meta-phenylene; and

wherein R_7 is

(1) -$(CH_2)_m$-CH_3, wherein m is an integer from one to 5, inclusive;
(2) phenoxy;
(3) phenoxy substituted by one, two or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;
(4) phenyl;
(5) phenyl substituted by one, two or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;
(6) phenylmethyl, phenylethyl, or phenylpropyl; or
(7) phenylmethyl, phenylethyl, or phenylpropyl substituted by one, two or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl; with the proviso that R_7 is phenoxy or substituted phenoxy, only when R_3 and R_4 are hydrogen or methyl, being the same or different.

4,259,251
TREATMENT OF EFFLUENT

John B. Akers, Bebington, and David C. Peters, Heswall, both of England, assignors to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

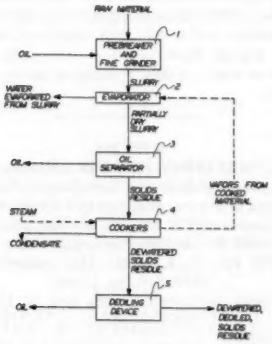
Filed Feb. 7, 1980, Ser. No. 119,225
Claims priority, application United Kingdom, Feb. 14, 1979, 5290/79
Int. Cl.[3] C11B *13/00, 1/10*
U.S. Cl. 260—412.5 10 Claims

1. A process for the production of fatty acid soaps from sludge, which comprises the steps of:
(i) extracting sludge, having a solids content of at least 15% by weight, with a non-polar solvent to provide an extract comprising fatty matter; and
(ii) saponifying the fatty matter in the presence of a dipolar aprotic solvent having a dielectric constant of at least 15 to produce fatty acid soaps.

4,259,252
RENDERING METHODS AND SYSTEMS

Richard R. Perry, 1113 Balthis Dr., Gastonia, N.C. 28052; Anthony G. Maran, 25698 Yeoman Dr., Westlake, Ohio 44145, and Anton G. Schols, T. H. Haismastr. 4, 9251 Av Bergum, Netherlands

Filed Oct. 5, 1979, Ser. No. 82,015
Int. Cl.[3] C11B *1/12*
U.S. Cl. 260—412.6 24 Claims



1. An improved process for rendering organic raw material comprising oil, water and solids, comprising the steps of:
making a slurry by reducing the particle size of said organic raw material and adding at least enough additional oil to make a pumpable slurry;
evaporating a portion of said water by heating said slurry under a partial vacuum to form a partially dewatered slurry;
removing a portion of said oil from said partially dewatered slurry to form a hydrous solids residue having a lower water content than said raw material; and
cooking said hydrous solids residue to remove substantially all the remaining water to form a dewatered solids residue.

4,259,253
PROCESS FOR THE PREPARATION OF STEREOSPECIFIC TRANS, TRANS-FARNESYLACETIC ACID

Arturo Donetti, Milan; Enzo Cereda, Tortona, and Elio Bellora, Milan, all of Italy, assignors to Istituto de Angeli S.p.A., Milan, Italy

Filed Jan. 28, 1980, Ser. No. 115,736
Int. Cl.[3] C11C *1/04;* C11D *13/00;* C11C *1/00*
U.S. Cl. 260—418 6 Claims

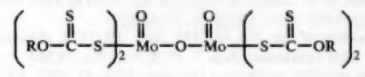
1. A process for the isolation of substantially pure trans,trans-farnesylacetic acid from an isomeric mixture of trans,trans- and cis,trans-farnesylacetic acid or an ester thereof, which comprises converting the components of said isomeric mixture into their higher alkali metal salts, separating the salt of trans,trans-farnesylacetic acid by recrystallization from an organic solvent, and converting the isolated salt of trans,trans-farnesylacetic acid into the free acid by acidification.

4,259,254
METHOD OF PREPARING LUBRICANT ADDITIVES

Robert F. Bridger, Hopewell, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,875
Int. Cl.[3] C07F *11/00*
U.S. Cl. 260—429 R 8 Claims

1. A process for preparing a compound suitable for use in synthetic hydrocarbon oils of lubricating viscosity of the formula:



comprising the step of reacting a metal molybdate or an ammonium molybdate with a hydrocarbyl dithiocarbonate acid in a mole ratio of molybdates to dithiocarbonate acid of from about 1:1 to 4:1 at a temperature of from 5° to about 60° C. and a pressure of from ambient to 50 psi for about 0.5 to 5 hours.

4,259,255
PROCESS FOR THE PRODUCTION OF ISOCYANATES

Gerhard Grögler, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Continuation of Ser. No. 821,017, Aug. 1, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 15,577
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1976, 2637114
Int. Cl.[3] C07C *118/00, 143/68*
U.S. Cl. 260—456 P 6 Claims

6. A process for the preparation of isocyanatoaryl sulfonic acid esters comprising

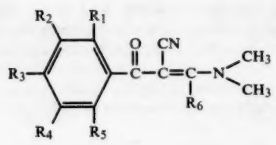
(a) reacting (1) compounds corresponding to the formula $(Cl—SO_2)_n—R_3(NCO)_m$ with (2) phenol
wherein
R_3 represents an optionally C_1–C_4 alkyl-substituted (m+n)-functional aromatic hydrocarbon radical having from 6 to 15 carbon atoms;
m represents 1 or 2; and
n represents 1 or 2;
(b) esterifying the sulfochloride group of the product of step (a) with an alcoholate; and
(c) thermally splitting off the phenol used as blocking agent.

4,259,256
2-BENZOYL-3-DIMETHYLAMINO-2-ALKENONITRILES

John W. Hanifin, Jr., Suffern, and David N. Ridge, Upper Grandview, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 968,899, Dec. 13, 1978, Pat. No. 4,181,677. This application Jul. 2, 1979, Ser. No. 53,890
Int. Cl.[3] C07C *121/78*
U.S. Cl. 260—465 E 2 Claims

1. A compound of the formula:



wherein R_1, R_2, R_3, R_4 and R_5 are each individually selected from the group consisting of hydrogen, halogen, alkyl having up to 4 carbon atoms, alkoxy having up to 4 carbon atoms, trifluoromethyl and trichloromethyl with the proviso that at least two of R_1, R_2, R_3, R_4 and R_5 must be hydrogen and R_6 is alkyl having up to 4 carbon atoms.

4,259,257

1-PHENYL-2-AMINO-1,3-PROPANEDIOL-N-ARYLOXY-ALKYL DERIVATIVES

Laszlo Levai; Gabor Fazekas; Lujza Petocz, and Katalin Grasser, all of Budapest, Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

Continuation of Ser. No. 885,111, Mar. 10, 1978, abandoned. This application Sep. 7, 1979, Ser. No. 73,563

Claims priority, application Hungary, Mar. 11, 1977, EE 2484

Int. Cl.[3] **C07C** *93/06*

U.S. Cl. 260—501.18 **1 Claim**

1. 1-phenyl-2-phenoxyisopropylamino-1,3-propanediol and its isomers and pharmaceutically acceptable salts.

4,259,258

PREPARATION OF BIS-N-CHLORAMIDES OF CYCLOALIPHATIC CARBOXYLIC ACIDS

Hans-Georg Zengel, Kleinwallstadt, and Manfred Bergfeld, Erlenbach am Main, both of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 651,084, Jan. 21, 1976, abandoned. This application Jul. 26, 1978, Ser. No. 928,118

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1975, 2502412

Int. Cl.[3] **C07C** *103/737*

U.S. Cl. 260—543 A **3 Claims**

1. A process for the preparation of a bis-N-chloramide of cyclohexane-1,4-dicarboxylic acid, comprising chlorinating the corresponding diamide of said acid with chlorine in a medium consisting essentially of an aqueous mineral acid at a temperature between 0° and 4° C.

4,259,259

PREPARATION OF β-AMINOPROPIONAMIDES

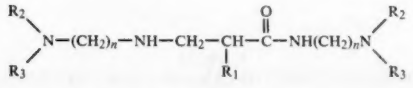
Edward E. McEntire, Austin, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Filed Nov. 15, 1979, Ser. No. 94,416

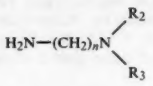
Int. Cl.[3] **C07C** *102/06*

U.S. Cl. 564—137 **9 Claims**

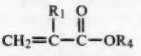
1. A process for the preparation of a β-aminopropionamide of the formula



wherein R_1 is H or methyl, n is an integer of 2 to 6 and R_2 and R_3, taken singly are hydrogen or lower alkyl groups or R_2 and R_3, taken jointly when combined with the nitrogen atom form a heterocyclic group selected from the group consisting of morpholine, pyrrolidine and piperidine ring groups, which process comprises reacting in the presence of an alkali or alkaline earth metal salt of a strong acid having a pK_a of about 2 acting as a catalyst, a tertiaryaminoalkyl amine of the formula.



where R_2, R_3 and n are as above with an acrylic or methacrylic compound of the formula:



where R_1 is as above and R_4 is lower alkyl and recovering said β-aminopropionamide.

4,259,260

SOLVENT PROCESS FOR HYDROLYZING 5-ISOTHIOCYANO-5,6-DIHYDRODICYCLOPENTADIENE

William R. Diveley, Wilmington, Del., assignor to Boots Hercules Agrochemicals Co., Wilmington, Del.

Filed Jan. 22, 1980, Ser. No. 114,441

Int. Cl.[3] **C07C** *83/00*

U.S. Cl. 564—459 **4 Claims**

1. A process of preparing 5-amino-5,6-dihydro-dicyclopentadiene, which comprises reacting 5-isothiocyano-5,6-dihydrodicyclopentadiene and caustic in a reaction medium comprising a polar organic liquid which is inert under the reaction conditions and which at least partially dissolves the reactants and products.

4,259,261

METAPHENYLENEDIAMINES

Andree Bugaut, Boulogne, and Jean-Jacques Vandenbossche, Aulnay, both of France, assignors to L'Oreal, Paris, France

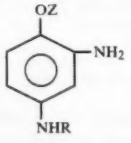
Continuation-in-part of Ser. No. 826,069, Aug. 19, 1977, abandoned, which is a continuation-in-part of Ser. No. 722,819, Sep. 13, 1976, Pat. No. 4,125,367. This application Mar. 21, 1979, Ser. No. 22,615

Claims priority, application France, Aug. 20, 1976, 76 25387

Int. Cl.[3] **C07C** *91/40, 91/42, 93/14*

U.S. Cl. 564—99 **1 Claim**

1. Compounds having the formula:



or the acid salts thereof in which formula R is hydrogen and Z is mesylaminoethyl.

4,259,262

CATALYTIC HYDROGENATION OF UNSATURATED DINITRILES

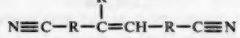
Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 23, 1979, Ser. No. 69,200

Int. Cl.[3] **C07C** *85/12*

U.S. Cl. 564—491 **12 Claims**

1. A process for the catalytic hydrogenation of an unsaturated dinitrile feedstock comprising at least one unsaturated dinitrile compound of the formula



wherein each R is independently selected from the group consisting of an alkylene radical and an alkylidene radical, R′ is an alkyl radical, and the number of carbon atoms in said compound is in the range of 7 to 30; which comprises contacting said feedstock under suitable hydrogenation conditions in a reaction zone with ammonia; hydrogen; and a catalyst composition consisting essentially of a catalytic component selected from elemental ruthenium, ruthenium compounds which are reducible by hydrogen to elemental ruthenium at said suitable hydrogenation conditions, and mixtures thereof supported by a granular catalyst support; in a suitable diluent to thereby effect the hydrogenation of said at least one unsaturated dinitrile compound to the corresponding branched-chain saturated aliphatic diamine, wherein said granular catalyst support has a diameter in the range of from about 0.5 inch (1.27 cm) diameter to about 30 mesh.

4,259,263

HALOGENATED HYDROCARBONS AND A METHOD FOR THEIR PREPARATION

John Crosby, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 1, 1979, Ser. No. 80,326

Claims priority, application United Kingdom, Oct. 26, 1978, 41988/78

Int. Cl.³ C07C *21/18*

U.S. Cl. 570—135 **4 Claims**

1. A halogenated hydrocarbon characterised by the general formula:

wherein

Y represents fluorine, chlorine, bromine, or $-(CF_2)_mW$

R represents hydrogen or lower alkyl,

R^1 represents lower alkyl,

X represents chlorine, bromine or iodine

W represents hydrogen, fluorine or chlorine and m is 1 or 2.

4,259,264

PROCESS FOR THE CONTINUOUS CHLORINATION OF OLEFINS IN THE LIQUID PHASE AND AN APPARATUS FOR CARRYING OUT THE PROCESS

Ludwig Schmidhammer, and Ernst Selbertinger, both of Marktl, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 15, 1979, Ser. No. 3,341

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1978, 2803285

Int. Cl.³ C07C *17/02, 17/10*

U.S. Cl. 570—247 **7 Claims**

1. In a process for the continuous chlorination of olefins in the liquid phase in the presence of a chlorination catalyst, comprising continuously circulating the reaction mixture through a circulatory system which comprises a heated reaction zone, a heat exchanger to cool said reaction mixture, an outlet conduit, a circulation reservoir, and an inlet conduit; continuously introducing olefin to said inlet conduit; continuously introducing chlorine to said inlet conduit; continuously introducing catalyst to said inlet conduit; and continuously removing the reaction product from said system; the improvement comprising: continuously measuring the concentration of dissolved chlorine in said reaction mixture in a measuring zone, generating an electrical signal proportional to the chlorine concentration, and controlling the introduction of said olefin responsive to said signal such that said chlorine is always present in a stoichiometric excess of from 50 to 500 ppm by weight relative to said olefin.

4,259,265

CARBURETOR FOR INTERNAL COMBUSTION ENGINES

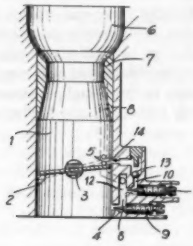
Dieter Schwander, Ratingen, and Bernd Findeisen, Dusseldorf, both of Fed. Rep. of Germany, assignors to Pierburg GmbH & Co. KG, Neuss, Fed. Rep. of Germany

Filed Aug. 28, 1979, Ser. No. 70,694

Claims priority, application Fed. Rep. of Germany, Sept. 27, 1978, 2841916

Int. Cl.³ F02M *3/08*

U.S. Cl. 261—41 D **1 Claim**



1. A carburetor for internal combustion engines comprising: a fuel-carrying main injection system, a main throttle, an intake duct, said main injection system discharging into said intake duct upsteam of said main throttle, said main throttle being arbitrarily actuated; an idling mixture duct discharging downstream of said main throttle via an arbitrarily adjustable cross section; at least one transition opening leading from said idling mixture duct to said intake duct; said intake duct having an exit cross section shifting upon opening of said main throttle out of idling position from an upstream section of said intake duct to downstream section; an auxiliary duct discharging into said downstream section for adding further mixture; an idling regulating screw; said auxiliary duct connecting said idling mixture duct upstream of said idling regulation screw to an exit opening; adjusting screw means for regulating the cross section of said auxiliary duct; and a ball retaining valve in said auxiliary duct, so that an idling mixture may be adjusted independently of a transition mixture.

4,259,266

VARIABLE-VENTURI CARBURETOR

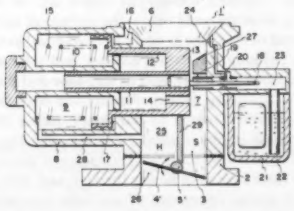
Norihiko Nakamura, Mishimashi, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Oct. 29, 1979, Ser. No. 89,131

Claims priority, application Japan, Feb. 21, 1979, 54-18406

Int. Cl.³ F02M *9/06*

U.S. Cl. 261—44 C **8 Claims**



1. In a variable-venturi carburetor having a throttle valve with a shaft having a given axis and provided downstream in a bore with an axis, an air horn provided upstream, a venturi

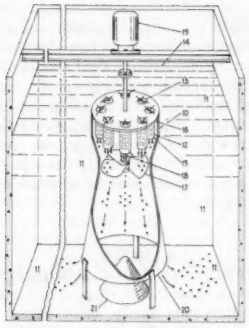
portion formed between the throttle valve and the air horn, a main nozzle provided on one side of the venturi portion, a suction chamber provided on the other side of the venturi portion, and a suction piston having a rod slidably supported by a rod guide of the suction chamber and forming between the suction chamber and the suction piston a negative pressure chamber with a suction spring therebetween, the suction piston being capable of moving forward and backward in a direction substantially perpendicular to the venturi portion, the improvement wherein there is provided within said mixing chamber in said bore at least one bulkhead disposed substantially along a given plane which includes therein said given axis of said shaft of said throttle valve and extends in the direction of said axis of said bore, said throttle valve being pivotable substantially perpendicular to said given plane, said bulkhead being positioned on the side of said main nozzle with respect to said plane and having its lower end positioned adjacent to said shaft of said throttle valve virtually sealing said lower end of said bulkhead.

4,259,267

AERATION APPARATUS BY MEANS OF VORTEX ACTION

Kenneth K. Wang, 403 Thompson Ave., Apt. #1, Glendale, Calif. 91201

Filed Mar. 15, 1977, Ser. No. 777,859
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—93 **8 Claims**



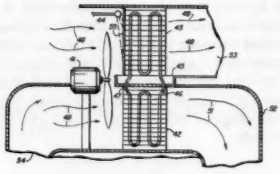
1. Apparatus for promoting dissolution of gas in a liquid comprises flow confining means which is submerged in said liquid and substantially vertically disposed; there is at least one substantially vertically disposed tube, the said tube is enclosed in the flow confining means, the upper end of said tube is positioned a short distance below the surface of said liquid and the lower end of said tube is open, a transverse barrier is across said flow confining means for holding said tube and baffling the gaps between the outer wall of said tube and the inner wall of said flow confining means, thereby the only flow path to said flow confining means at the upper end is through said tube, a pumping means is disposed within said flow confining means and below said tube for producing a downward flow within said flow confining means through said tube, the downward action at said upper end of said tube generates a vortex therein and said gas is entrained in the center of said vortex and mixed with the flowing liquid in said tube, the gas-liquid mixture is drawn in said flow confining means by the action of said pump means and subsequently dispersed into said liquid body through the lower end of said flow confining means.

4,259,268

DUAL RADIATOR HEAT EXCHANGER

James DiRoss, 8002 E. Hubbell, Scottsdale, Ariz. 85257

Filed Dec. 26, 1978, Ser. No. 972,723
Int. Cl.³ F24F *13/02*
U.S. Cl. 261—151 **5 Claims**



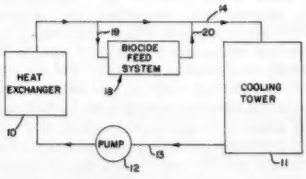
1. An air conditioning apparatus comprising:
coil means comprising interconnected first and second coil portions,
said first and second coil portions being substantially filled with recirculatable water,
said coil means being mounted with said first coil portion above said second portion,
a cooling means mounted on a given side of said first portion for water bearing air movement across the coils of said first coil portion,
blower means for directing only atmospheric air through said cooling means and over the coils of said first coil portion and back to the atmosphere for cooling the water flowing through the coils of said first coil portion,
duct means for interconnecting a space to be air conditioned with said second coil portion,
said blower means continuously withdrawing a quantity of air from a space being air conditioned and directing said withdrawn air over the coils of said second coil portion for cooling purposes and recirculation to said space,
the water cooled in said first coil portion by said cooling means circulating through the coils of said second coil portion and cooling said withdrawn quantity of air passing over the coils of said second coil portion.

4,259,269

CHEMICAL FEED SYSTEM

William F. Flowers, Bolingbrook, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Oct. 19, 1979, Ser. No. 86,662
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—151 **9 Claims**



1. In a water cooling system for a heat exchanger, a water cooling tower connected by water lines to the heat exchanger and pumping means for circulating the water between and through the cooling tower and the heat exchanger, the improvement in an apparatus for adding a biocide chemical to the

water to control microbiological growth within the cooling tower and the heat exchanger surfaces served by the tower, said apparatus comprising a pipe having an inlet connected to the water circulating line of the system ahead of the cooling tower and an outlet connected to said line downstream from the inlet and ahead of the cooling tower thereby causing water flow through the pipe, venturi means in said pipe utilizing the water flow to produce suction, and means supplying a biocide chemical to the suction means whereby the biocide is under suction at all times in the supply means and is drawn into the pipe water flow.

4,259,270

APPARATUS AND METHOD FOR THE MANUFACTURE OF SPLAT FOILS FROM METALLIC MELTS

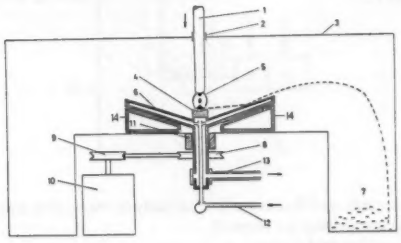
Heinrich Winter, Eschborn, and Dietrich Merz, Kelkheim, both of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 13, 1978, Ser. No. 942,043

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1977, 2743090

Int. Cl.³ B22D *9/10*

U.S. Cl. 264—8 **18 Claims**



1. A method for making metallic splat foils comprising the steps of:

(a) producing molten metal droplets;

(b) directing said molten metal droplets onto a rotating plate;

(c) rotating said plate so as to cause said molten metal droplets to be discharged from said plate by centrifugal force; and

(d) contacting said discharged molten metal droplets with a rotating cooling conical surface so as to rapidly solidify and stretch said molten metal droplets to form said splat foils, said splat foils being detached from the rotating conical surface by centrifugal force.

2. Apparatus for making splat foils by melting and rapidly solidifying a metallic material, said apparatus comprising:

(a) means for producing droplets of metal;

(b) a rotatable central plate upon which said metal droplets fall;

(c) a conical plate attached to said central plate so as to rotate therewith and located such that the metal droplets are spun off said rotating central plate, strike the upper surface of said conical plate, are rapidly solidified and stretched into foils, and are detached from the surface by centrifugal force;

(d) means to rotate said central plate and said conical plate; and

(e) cooling means to cool the upper surface of said conical plate.

4,259,271

METHOD OF MAKING SHOT FROM MOLTEN SILICEOUS-ALUMINOUS COMPOSITION

L. John Minnick, 306 Boyer Rd., Cheltenham, Pa. 19012; William C. Webster, 3008 Potshop Rd., Norristown, Pa. 19401, and Charles L. Smith, 34 Corson Rd., Conshohocken, Pa. 19428

Continuation-in-part of Ser. No. 708,200, Jul. 23, 1976, Pat. No. 4,153,655. This application May 4, 1979, Ser. No. 36,156

The portion of the term of this patent subsequent to May 8, 1996, has been disclaimed.

Int. Cl.³ B01J *2/02*

U.S. Cl. 264—8 **8 Claims**

1. Method of making a finely divided generally spherical product from a siliceous-aluminous composition having sufficient surface tension in molten particles thereof to assume spherical shape upon rapid cooling when said particles are suspended in a gaseous cooling medium, said composition also being characteristically hardenable into an amorphous state upon rapid cooling, said method consisting of:

forming a melt of said composition, said molten composition adapted by surface tension therein to form, from particles thereof, essentially spherical shapes upon rapid cooling;

pouring said melt onto a rotating mechanical member consisting of a plurality of horizontally disposed elements suspended between two circumferential supports in parallel vertical planes, the supports having a central bearing sleeve surrounding a horizontal axis about which the member rotates, said melt impinging upon the horizontal elements of said rotating mechanical member at a point in a 45° sector thereof bounded by top dead center and extending away from that point in the local direction of travel of said member at top dead center, the conditions of said pouring and said impinging being adapted to cause said molten composition to be thrown off in finely divided form in the direction of travel of said rotating member; and

said conditions also being adapted to permit rapid cooling and hardening of said finely divided molten composition in amorphous, essentially spherical, particulate form in the course of travel thereof through the air space surrounding said member.

4,259,272

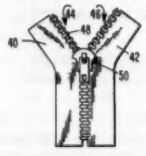
PLASTIFYING AND MOLDING ARTICLES FROM POLYMER STRIP

Norman W. MacFee, Conneaut Lake, Pa., assignor to Textron Inc., Providence, R.I.

Division of Ser. No. 809,842, Jun. 24, 1977, Pat. No. 4,115,489. This application Aug. 10, 1978, Ser. No. 932,891

Int. Cl.³ B29D *3/00, 31/00*; B29F *5/00*

U.S. Cl. 264—23 **7 Claims**



1. In a method of manufacturing coupling elements for a slide fastener, the steps comprising

rotating a cavity wheel,

advancing a continuous filament of thermoplastic,

severing segments of the filament,

placing the severed segments of the filament into succeeding cavities in a periphery of the cavity wheel as the cavities pass a loading station,

plastifying the severed segments of the filament, and

molding the plastified severed segments to at least partially form coupling elements,

said plastifying and said molding being performed in situ in the cavities of the cavity wheel after rotation of the cavities from the loading station.

4,259,273

FORMATION OF SOLID LAYERS OF MATERIAL

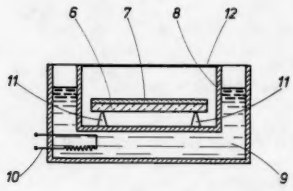
Hans-Henning Nolte, Gelsenkirchen, Fed. Rep. of Germany; Pol Baudin, Fontaine-l'Eveque, and Marcel De Boel, Chatelineau, both of Belgium, assignors to BFG Glassgroup, Paris, France

Continuation of Ser. No. 893,530, Apr. 4, 1978, abandoned. This application Dec. 11, 1979, Ser. No. 103,181

Claims priority, application United Kingdom, Apr. 14, 1977, 15583/77

Int. Cl.[3] **C04B** *35/02*

U.S. Cl. 264—42 **12 Claims**



1. A process for forming a solid layer of intumescent material comprising hydrated metal salt, from a fluid which comprises the steps of pouring the fluid material onto a mold, placing the mold within a chamber having at least one wall portion which is constituted by a vapor permeable sheet and being otherwise closed so as to offer a predetermined restraint to the escape of vapor from the chamber to the ambient atmosphere without contact of the fluid material with such sheet, and evaporating the liquid from the fluid material while the mold is within said chamber in order to dry layer-forming material contained therein.

4,259,274

METHOD AND APPARATUS FOR MAKING A LAMINATED SKI

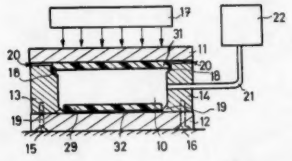
Antti-Jussi Tiitola, Tampere, Finland, assignor to Karhu-Titan Oy, Finland

Continuation-in-part of Ser. No. 732,335, Oct. 14, 1976, abandoned. This application Nov. 6, 1978, Ser. No. 958,170

Claims priority, application Finland, Oct. 15, 1975, 752865

Int. Cl.[3] **B29D** *27/04*

U.S. Cl. 264—46.5 **16 Claims**



1. A method for manufacturing a ski having upper and lower plastic laminations and a foamed plastic core situated between and bonded to said laminations in a mold having side surfaces defining an elongate mold cavity having a front end region which extends downwardly so as to form an upwardly extending front ski tip portion and a rear end region for forming the rear ski portion, comprising the steps of situating the upper lamination in the interior of a mold next to and extending along the lower inner surface of the mold, situating the lower lamination in the interior of the mold in spaced overlying relationship to said upper lamination, with said mold having opposed inner side surfaces extending between side edges of the laminations situated in the mold, and injecting into the spaces between said laminations and said mold side surfaces a foamable plastic which foams and cures in the interior of the mold while forming a foamed core having next to said side surfaces of the mold dense side portions which become integral with the laminations and define therewith a shell in which the foamed core with an interior portion of lesser density than said side portions thereof is situated, and removing from the mold said ski in a completely finished condition having said laminations bonded to said foamed core.

4,259,275

Patent Not Issued For This Number

4,259,276

HOLE FORMING

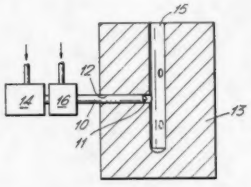
Derek S. Rawlings, 71 Cradle Bridge Dr., Willesborough, Ashford, Kent, England

Filed Jun. 19, 1978, Ser. No. 917,042

Claims priority, application United Kingdom, Jun. 24, 1977, 26671/77

Int. Cl.[3] **B29C** *17/10*

U.S. Cl. 264—68 **8 Claims**



1. A method of forming a hole laterally in the wall of plastic tubing comprising the steps of:

a. piercing said tubing,

b. inserting a smooth-surfaced needle into the aperture formed by said piercing step,

c. rotating said needle at high speed about its longitudinal axis while it contacts the rim of said aperture so as to cause frictional heating and consequent plastic flow of the material of said tubing in the region of said aperture and thereby smooth the rim contour, and

d. withdrawing said needle.

4,259,277

METHOD AND APPARATUS FOR THE INJECTION OF ADDITIVES INTO PLASTICS MATERIAL

Alan H. Hill, Bury, England, assignor to The General Engineering Company (Radcliffe) Limited, Manchester, England

Filed Oct. 16, 1978, Ser. No. 951,832

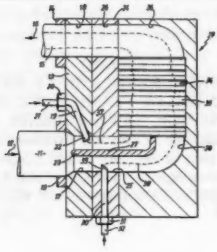
Claims priority, application United Kingdom, May 18, 1978, 20382/78

Int. Cl.[2] **B29F** *3/12;* **B32B** *3/00*

U.S. Cl. 264—75 **16 Claims**

1. A method of injecting at least one additive into a stream of homogenized basic plastics material comprising the steps of passing the homogenized mass of basic plastics material to an additive injection site, injecting at least one liquid additive into part at least of a boundary layer of the basic plastics material, passing the stream of plastics material to a gear pump means such that the part of the boundary layer into which the additive has been injected enters the spaces between the teeth of the gears of the gear pump means at least at one end region thereof, dispersing the additive in the boundary layer of the

basic plastics material such that substantially all of the additive remains in the boundary layer only, and passing the basic



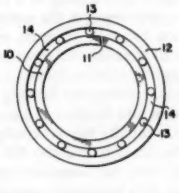
plastics material, with the additive therein, to a final product extruding means.

4,259,278

METHOD OF RESHAPING WARPED GRAPHITE ENCLOSURES AND THE LIKE

Vernon Flegel, Coleman, and Robert J. Anthony, Bay City, both of Mich., assignors to Ultra Carbon Corporation, Bay City, Mich.

Filed Jul. 9, 1979, Ser. No. 55,995
Int. Cl.³ F27B *14/10*
U.S. Cl. 264—81 **12 Claims**



1. A method of reshaping warped graphite susceptor enclosures which are split and whose confronting split edges have spread apart with repeated exposure to monocrystalline vapor influences comprising:

(a) compressing the enclosure to move the confronting edges to a less spaced apart condition,

(b) holding the enclosure in said compressed condition while heating it from the temperature at which it was compressed to a higher temperature sufficient to cause the vaporization of the monocrystalline material and the monocrystalline material carbide compounds resident as a boundary layer on the outer surface of the enclosure to drive off those materials sufficiently to cause the graphite enclosure to return substantially to its original set condition when cooled,

(c) and cooling the enclosure.

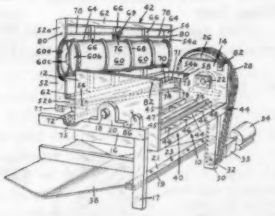
4,259,279

METHOD OF CASTING IN MOLDS FOR THE PRODUCTION OF CERAMIC HOLLOWWARE

Jerome S. Greenberg, Chicago, Ill., assignor to Regal China Corporation, Antioch, Ill.

Continuation of Ser. No. 786,494, Apr. 11, 1977, abandoned, which is a division of Ser. No. 559,038, Mar. 17, 1975, Pat. No. 4,043,737. This application Mar. 5, 1979, Ser. No. 17,095
Int. Cl.³ B28B *1/26*
U.S. Cl. 264—86 **1 Claim**

1. The method of casting ceramic hollowware in molds in which each of the molds has an opening through which the molds are filled and emptied comprising supporting a plurality of molds in a rotatable support with their mold openings directed generally upwardly, filling said molds with a ceramic slip, waiting a predetermined length of time to permit initial water removal from that portion of the slip adjacent to the interior of said molds, rotating said support and the molds supported therein to a first position wherein the mold openings are positioned in a position to pour off only a portion of said slip, thereafter rotating said support and said molds to a second



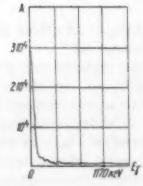
position wherein said mold openings are disposed downwardly to a greater extent than in said first position whereby to remove the remaining excess slip from said molds, opening said support and said molds, removing the molded hollowware articles from said molds, and the wall thickness of the molded article being of such a thickness as to be normally subject to implosion if all the excess slip is poured out of the mold only in said second position.

4,259,280

METHOD FOR PREPARING NEUTRON-ACTIVATION DETECTORS

Tristan S. Ambardanishvili, ulitsa Lenina, 2a, Gruzinskaya SSr, Mtskhetsky raion, poselok Zages; Vakhtang J. Dundua, ulitsa Buachidze, 25, Tbilisi; Gennady I. Kiknadze, prospekt V. Pshavela, VI kvartal, 31 korpus, kv. 19, Tbilisi; Mikhail A. Kolomiitsev, ulitsa Ozhio, 7, Tbilisi; Teya V. Tsetskhladze, ulitsa Pekina, 47, kv. 4, Tbilisi; Vladimir A. Gromov, ulitsa Dzhordzhqdze, 5, kv. 9, Tbilisi, and Nanuli V. Bagdavadze, prospekt Vazha Pshavela, kvartal 4, korpus 21, kv. 1, Tbilisi, all of U.S.S.R.

Continuation of Ser. No. 224,439, Feb. 8, 1972, abandoned. This application Mar. 18, 1976, Ser. No. 668,255
Int. Cl.³ G01T *3/00*
U.S. Cl. 264—101 **6 Claims**



1. A method for producing an activation detector of neutrons, comprising an element-detector material capable of being activated by neutrons and distributed in a bulk of a matrix incapable of being activated by neutrons, comprising the steps of:

(a) dissolving a polycondensation resin capable of being heat solidified in a liquid solvent to produce a solution;

(b) introducing said element-detector material into said solution in a ratio of 10^{-12} to 1.3 10^{-2} g per 1 g of the resin to produce a mixture;

(c) heating said mixture at a temperature of 60°–80° C. during 20–24 hours;

(d) cooling thereafter said mixture to room temperature to produce a solidified mixture;

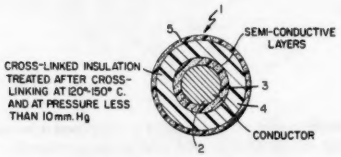
(e) grinding said solidified mixture into a powder; '(f) pressing said powder into tablets under a pressure of 200–2000 kg/cm^2, said tablets being detectors.

4,259,281

PROCESS FOR REDUCING MICRO-VOIDS IN THE EXTRUDED INSULATION OF ELECTRIC CABLES

Gianmario Lanfranconi, Trezzo d'Adda, and Bernardino Vecellio, Milan, both of Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed Apr. 17, 1979, Ser. No. 30,726
Claims priority, application Italy, Apr. 19, 1978, 22147 A/78
Int. Cl.^{3} B29C *25/00*
U.S. Cl. 264—102 **7 Claims**


SEMI-CONDUCTIVE LAYERS
CROSS-LINKED INSULATION TREATED AFTER CROSS-LINKING AT 120°-150° C. AND AT PRESSURE LESS THAN 10 mm. Hg
CONDUCTOR

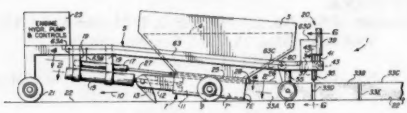
1. A process for reducing the micro-voids in cross-linked polyethylene insulation around an electric cable conductor and for increasing the perforation gradient thereof, said process comprising heating the so cross-linked insulation at a temperature from about 120° to 150° C. and in an ambient having a pressure less than 10 mm. Hg for a time sufficient to significantly reduce the number of said micro-voids per mm^3.

4,259,282

ADOBE BRICK MAKING MACHINE AND METHOD

Milton T. Goldsmith, Box 703, Chino, Ariz. 86323

Filed Aug. 17, 1979, Ser. No. 67,295
Int. Cl.^{3} B29C *17/00*
U.S. Cl. 264—148 **8 Claims**



1. A method for making bricks from plastic material, said method comprising the steps of:

a. conveying the plastic material into a container;

b. conveying a quantity of the plastic material from the container into an extrusion chamber, the extrusion chamber having an extrusion orifice through which the plastic material in the extrusion chamber can be extruded, the extrusion orifice being positioned to cause extrusion of the plastic material directly onto a surface, a lower edge of the extrusion orifice being approximately parallel to and approximately at the same level as said surface;

c. compressing the plastic material in the extrusion chamber to cause the plastic material therein to be extruded through the extrusion orifice onto said surface, the plastic material being extruded from the orifice at a first velocity;

d. moving the extrusion chamber and the extrusion orifice along said surface during step (c) at a second velocity which is substantially equal to said first velocity,

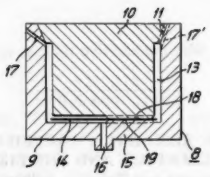
wherein the container includes a hopper attached above the extrusion chamber, the hopper being separated from the extrusion chamber by means of a slidable divider plate, wherein step (b) includes sliding the divider plate in one direction to allow moist adobe material in the hopper to flow into the extrusion chamber and sliding the divider plate in the opposite direction to seal the extrusion chamber from the hopper, whereby no significant deformation of the extruded plastic material occurs as a result of differences between said first and second velocities.

4,259,283

MANUFACTURE OF A SIEVE HAVING SUBSTANTIALLY PLANE SIEVE SHEETS

Albert Greutert, Sachseln, and Ernst Stumvoll, Sarnen, both of Switzerland, assignors to Elfo AG Sachseln, Switzerland

Continuation-in-part of Ser. No. 721,632, Sep. 8, 1976. This application Apr. 20, 1979, Ser. No. 31,889
Int. Cl.^{3} B29D *23/00*; B29C *27/00*; B21D *35/00*
U.S. Cl. 264—152 **6 Claims**



6. A method for constructing a sieve defined by a container and a sieve sheet mounted to the container comprising the steps of: providing a sieve sheet constructed of a sustantially rigid material; forming a plurality of slots extending through the sheet and dividing the sheet into a plurality of contiguous sheet sections, the slots converging at a common point and extending from the point towards the periphery of the sheet; devising a connection between adjacent sections and across corresponding slots to maintain adjacent sections secured to each other, deflecting the sections from a common plane by a relatively minor amount; thereafter flowing a plastics material from the common point into the slots and around the periphery of the sheet into a substantially tubular configuration extending transversely from the sheet to thereby fill the slots with the plastics material and form the container and embed edges of the sheet defining the slots in plastics material; and continuing the step of deflecting until the plastics material in the slots has hardened, whereby the hardened plastic material forms a rigid interconnection across the respective slots between corresponding, opposing edges of the sections.

4,259,284

PROCESS FOR SPINNING FIBERS OF IONIC THERMOPLASTIC POLYMERS

Robert D. Lundberg, Bridgewater, and Henry S. Makowski, Scotch Plains, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 855,550, Nov. 29, 1977, Pat. No. 4,172,820. This application Feb. 14, 1979, Ser. No. 12,114
Int. Cl.^{3} D01F *6/00*
U.S. Cl. 264—184 **4 Claims**

1. An improved process for forming a fiber by passing a solution of a neutralized sulfonated thermoplastic polymer through a spinneret having a plurality of orifices, said sulfonated thermoplastic polymer having about 10 to about 100 meq. of neutralized sulfonate groups per 100 grams of said neutralized sulfonated thermoplastic polymer, said neutralized sulfonated thermoplastic polymer being formed from a thermoplastic polymer selected from the group consisting of polystyrene, poly-t-butyl-styrene, polychlorostyrene, polymethylstyrene and co- and terpolymers with acrylonitrile and vinyl toluene, a cation of said neutralized sulfonate groups being selected from the group consisting of aluminum, antimony, lead and Groups IA, IIA, IB and IIB of the Periodic Table of Elements, wherein the improvement consists essentially of dissolving said neutralized sulfonated thermoplastic polymer in

a solvent system to form said solution, said solvent system being formed from a blend of a first solvent and a second solvent, said first solvent being an aromatic solvent which primarily solvates a hydrocarbon backbone of said neutralized sulfonated thermoplastic polymer, said second solvent being selected from the group consisting of C_1 to C_7 aliphatic and cycloaliphatic alcohols, said second solvent solvating ionic groups of said neutralized sulfonated thermoplastic polymer, said first solvent comprising about 60 to about 98 vol. % of said mixed solvent, said neutralized sulfonated thermoplastic polymer being at a concentration level of about 5 to about 50 grams per 100 ml. of said solvent system, said solution having a Brookfield viscosity at room temperature and 6 rpm. of about 1,000 to about 200,000 centipoises.

4,259,285

PROCESS FOR EMBOSSING POLYVINYLCHLORIDE SHEETS

Wilhelm Baumgartl, Hart; Hermann Funke, Altötting; Ulrich Reiff, Neuötting, and Franz Scheier, Burgkirchen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 30, 1979, Ser. No. 61,940

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2833982

Int. Cl.³ B29C *17/00*

U.S. Cl. 264—284 **2 Claims**

1. In a process for embossing a sheet of vinyl chloride polymers having at least 80 to 95% by weight of polymerized vinyl chloride, by passing the sheet between a pair of rollers consisting of the embossing steel roller and the counter roller having a rubber jacket, whereby the pair of rollers turns in the direction and at the speed of the moving sheet, heating the embossing roller to a temperature of from 150° to 230° C., heating the sheet to a temperature below the temperature of the embossing roller and within the range of the shaping temperature of the sheet, and whereby the pattern of the embossing roller is engraved in the sheet with pressure, the improvement which comprises passing the sheet to be embossed between said pair of rollers

(a) at a speed of from 10 to 50 m/min

(b) at a temperature of from 70° to 130° C.

(c) at a pressure of from 250 to 400 N/cm

(d) at a wrapping degree of from 90 to 180 on the counter roller, which is heated at a temperature of from 70° to 110° C., and

(e) without wrapping the embossing roller.

4,259,286

METHOD AND APPARATUS FOR TEXTURING A THERMOPLASTIC FILM

Paul R. Louis, Green Township, Hamilton County; Eugene R. Sorensen, Springfield Township, Hamilton County, and Thomas R. Ballard, Sycamore Township, Hamilton County, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 4, 1979, Ser. No. 36,254

Int. Cl.³ B29C *17/04*

U.S. Cl. 264—555 **7 Claims**

1. A method for texturing a running ribbon of thermoplastic film material comprising the steps of:

establishing and maintaining control of said film by establishing and maintaining constant tension therein;

providing a texturing means for imparting a multiplicity of nubbles to said film, said texturing means comprising a texturing cylinder having a radially outwardly surface and a multiplicity of particles adhered to said radially outwardly surface;

isolating a portion of said film from said constant tension while it is in contacting relation with said texturing means;

heating the tension isolated portion of said film to raise its temperature above its thermoplastic temperature;

urging said heated, tension isolated portion of said film against said texturing means to cause said film to become textured;

cooling the textured film to lower its temperature below the thermoplastic temperature of the film before subjecting said film to downstream tension.

4,259,287

TESTING TUBE CONSTRUCTION FOR MEASURING SODIUM HYDROXIDE AND/OR CALCIUM OXIDE

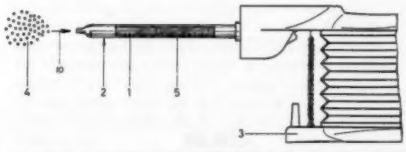
Kurt Leichnitz, Grönau, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 25, 1979, Ser. No. 88,125

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855648

Int. Cl.³ G01N *31/22*

U.S. Cl. 422—59 **3 Claims**



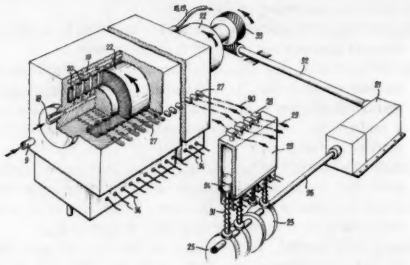
1. A testing tube, for quantitatively measuring sodium hydroxide and/or calcium oxide aerosols, comprising, a tube having an opening at each end for the flow of a gas to be tested therethrough, a front layer of material disposed in said tube comprising a substrate material impregnated with ammonium chloride and an indicating layer disposed behind the substrate material in respect to the direction of gas flow and comprising a substrate material impregnated with acid and bromphenol blue, said tube being made of glass and incuding breaking tips at each end which may be severed to open the tube, whereby stoichiometric quantities of the sodium hydroxide and/or calcium oxide of the gas to be tested react with the ammonium choride in the front layer to produce stoichiometric quantities of ammonia, the ammonia reacting with the acid in the presence of the bromphenol blue to indicate the stoichiometric and quantitative amount of ammonia produced which corresponds to the amount of sodium hydroxide and/or calcium oxide in the gas to be tested.

4,259,288

AUTOMATIC MULTICHANNEL APPARATUS FOR PERFORMING ANALYSES ON FLUIDS, IN PARTICULAR FOR PERFORMING CLINICAL-CHEMISTRY ANALYSES ON BIOLOGICAL LIQUIDS

Henry H. Welch, No. 437, Via Nomentana, Rome, Italy

Filed Feb. 12, 1979, Ser. No. 11,590
Claims priority, application Italy, Feb. 15, 1978, 48060 A/78
Int. Cl.³ G01N *35/06, 1/14*
U.S. Cl. 422—63 **7 Claims**



1. Automatic multichannel apparatus to perform analyses on fluids comprising in combination an intermittently indexed drum, an array of sample holder test tubes mounted on said drum, a movable arm, a needle borne by said movable arm for aspirating the sample and adapted for introduction, successively, into said test tubes, a distributor-mixer complex for distributing the sample to be analyzed in many segments and adding the various reagents for the various pre-established analyses, and means for the measuring of result data related to the analyses, said distributor-mixer complex including a fixed block, two concentric cylinders each having an annular section, sealingly mounted within said fixed block, the outer cylinder having a series of cavities having inlet ducts and adapted to be filled with the reagents and the inner cylinder having a corresponding series of radial passages adapted to be filled with the sample of liquid to be examined.

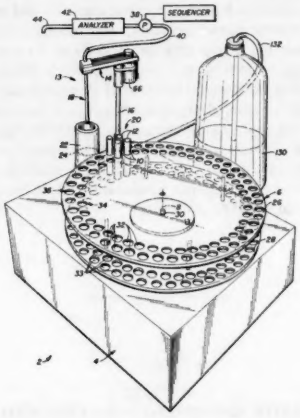
4,259,289

APPARATUS FOR RETRIEVING LIQUID SAMPLES FROM TEST TUBES

Robert E. Curry, Novato; Michael G. Simonsen, San Rafael, and Eric D. Schwartz, Richmond, all of Calif., assignors to Bio-Rad Laboratories, Inc., Richmond, Calif.

Filed Oct. 22, 1979, Ser. No. 86,916
Int. Cl.³ G01N *1/14, 35/06*
U.S. Cl. 422—64 **32 Claims**

1. Apparatus for sequentially aspirating a liquid from a plurality of upwardly open vials for the subsequent individual processing of aspirated liquid from each vial comprising: an aspirator including an upright, downwardly opening suction tube for sequential insertion into the vials; tray means supporting the vials for incrementally moving the vials to an aspiration station; positioning means for aligning the suction tube and the vial at the aspiration station; immersion means for vertically moving the suction tube into and out of a vial at the station so as to immerse a lower end of the tube in the liquid in such vial; flow means for withdrawing liquid in the vial for the subsequent processing of at least a portion of the withdrawn liquid; and means carried by the aspirator for agitating the liquid in



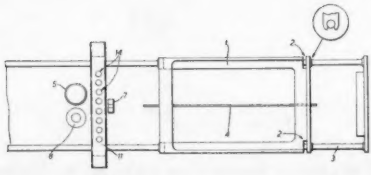
the vial at the aspiration station prior to the withdrawal of the liquid from the vial.

4,259,290

TRANSFER DEVICE FOR ANALYSIS EQUIPMENT

Osmo A. Suovaniemi; Pertti Ekholm, both of Helsinki, and Esko Kaukanen, Espoo, all of Finland, assignors to Kommandiittiyhtio Finnpipette Osmo A. Suovaniemi, Helsinki, Finland

Filed Jun. 18, 1979, Ser. No. 49,161
Claims priority, application Finland, Jul. 5, 1978, 782159
Int. Cl.³ G01N *21/00*; B65G *43/00*
U.S. Cl. 422—65 **8 Claims**



1. A transfer device for analysis equipment of the type wherein said transfer device comprises a track consisting of guide and support rails (**3**) on which to transfer a pit plate on a transport cassette (**1**) along the track, characterized in that

the transport cassette (**1**) includes a traction rail (**4**) parallel to said guide and support rails,

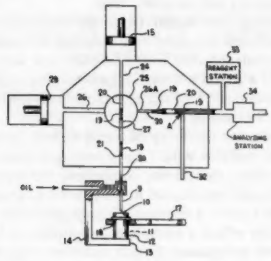
traction units are fitted onto the track in the transfer device as means operative jointly with said traction rail, said traction units consisting of at least one friction wheel (**5**) driven by motorized means, and

an optical reader is mounted on said track so as to align with said traction rail, said traction rail (**4**) being provided with sign codes (**6**) readable by means of said optical reader (**7**) so as to indicate the position relative to the optical reader (**7**) at which the transport cassette (**1**) is to be stopped so as to position the desired line of pits in said cassette as required by the operations to be performed in the analysis equipment.

4,259,291
METERING DEVICE

William J. Smythe, Canterbury, Conn., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Jul. 13, 1979, Ser. No. 57,541
Int. Cl.[3] G01N 1/14, 1/18, 1/20
U.S. Cl. 422—82 19 Claims

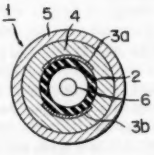


1. A metering system for aqueous samples, comprising:
a tubular probe having an inlet and inner and outer surfaces;
aspirating means in fluid communication with said probe;
means for immersing at least a portion of said probe into successive aqueous samples;
applicator means for directly applying a fluid to at least that portion of said outer surface of said probe which is to be immersed within said successive samples, said fluid being characterized as immiscible with respect to said successive samples and as preferentially wetting said probe to the substantial exclusion of said aqueous samples; and
means for relatively moving said applicator means and said probe with respect to each other to apply a thin layer of said fluid over at least said outer surface portion of said probe.

4,259,292
GAS DETECTING ELEMENT

Noboru Ichinose, Yohohama; Hideo Okuma, Kawasaki; Yuji Yokomizo; Takashi Takahashi, both of Tokyo; Mieko Nishihara, Kawasaki, and Masaki Katsura, Mitaka, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Jan. 31, 1978, Ser. No. 873,923
Claims priority, application Japan, Jan. 31, 1977, 52-8698
Int. Cl.[3] G01N 27/12
U.S. Cl. 422—98 9 Claims

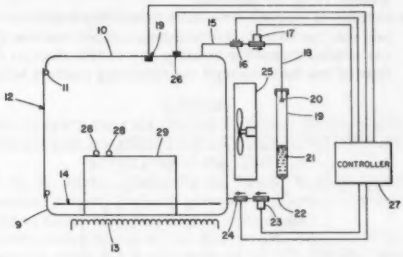


1. A gas detecting element comprising a hollow cylidrical insulative body, a pair of electrodes provided on the outer periphery of said insulative body, a gas detecting body made of a porous ZnO-based semiconductor and covering up the outer periphery of said insulative body and said electrodes, and a catalyst layer made of a catalytic material and coated on said gas detecting body, thereby covering up the surface of said gas detecting body.

4,259,293
FLUOROCHEMICAL VAPOR AUTOCLAVE

George L. Najarian, and Zaker I. Sabri, both of Chicago, Ill., assignors to American Dental Association Health Foundation, Chicago, Ill.

Filed Nov. 28, 1979, Ser. No. 98,133
Int. Cl.[3] A61L 2/06, 2/20, 2/24
U.S. Cl. 422—109 6 Claims



1. An improved vapor autoclave comprising, in combination:
a pressure chamber with a sealable access opening, means to support items for sterilization within said chamber, and a vaporizable sterilant liquid reservoir at the bottom of the chamber;
means for heating and vaporizing a sterilant liquid;
a gas and vapor discharge conduit from the top of the chamber;
vapor expansion and condensation valve means connected with the conduit;
means for collecting condensed vapor from the valve means;
means connecting the means for collecting with the chamber; and
control means for controlling the means for heating, and for controlling fluid flow through the conduit, valve means, collecting means and connecting means and providing a vapor from a vaporizable sterilant liquid in the reservoir having a vaporization temperature greater than 100° C. and a vapor form which is more dense than air and which is not miscible with air during a sterilizing cycle and providing a liquid retained within the reservoir during a nonsterilizing cycle, whereby said control means is arranged and constructed for controlling fluid flow such that the vapor from the sterilant liquid displaces air within the chamber and causes the air along with a portion of the vapor to vent through said conduit prior to initiation of the sterilizing cycle by said control means and the condensed vapor returns to the reservoir at the end of a sterilizing cycle.

4,259,294
APPARATUS FOR THE HYDROGENATION OF HEAVY HYDROCARBON OILS

Wouter C. Van Zijll Langhout; Abraham A. Pegels, and Joannes B. Wijffels, all of The Hague, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 3,697, Jan. 16, 1979, abandoned. This application Aug. 30, 1979, Ser. No. 71,333
Claims priority, application Netherlands, Jan. 20, 1978, 7800711
Int. Cl.[3] B01J 4/00, 8/04
U.S. Cl. 422—190 1 Claim

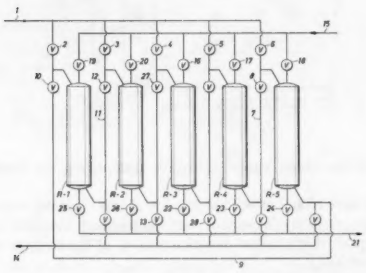
1. An apparatus for catalytic treatment of hydrocarbons comprising:
a plurality of closed reactors in series arrangement suitable for containing a substantially fixed bed of particulate catalyst, each said reactor having two inlets comprising a reactor inlet for admitting reactants to an upstream side of

said catalyst bed and a catalyst inlet for admitting fresh catalyst; each said reactor having two outlets comprising a reaction effluent outlet for passing reaction effluent from each said reactor and a catalyst outlet for passing deactivated catalyst from each said reactor;

a reactant source conduit means communicating with a source of reactants and with the inlet of each said reactor,

a reaction effluent conduit means communicating with the outlet of each said reactor, for withdrawing reaction effluent therefrom, and ultimate withdrawing of reaction effluent from the apparatus;

a plurality of reactant flow valve means disposed on each of said reactant source conduit means and said reaction effluent conduit means for isolating any of said reactors from flow of reactants through the remaining reactors serially;



one catalyst supply conduit, communicating with a source of particulate catalyst as a slurry and with the catalyst inlet of each reactor for supplying fresh catalyst to each said reactor, and communication with a source of pressure for pressuring said catalyst supply conduit to substantially reactor pressure;

one catalyst removal conduit, communicating with the catalyst outlet of each said reactor for removal of deactivated catalyst from said apparatus, and communicating with a source of pressure for pressuring said catalyst removal conduit to substantially reactor pressure, and

a plurality of catalyst flow valve means disposed on each of said catalyst supply conduit and said catalyst removal conduit for isolating any of said reactors for removing deactivated catalyst therefrom and supplying fresh catalyst thereto.

4,259,295

OXALIC ACID LEACHING OF MARINE NODULES

Harry Zeitlin, Honolulu, Hi., and Quintus Fernando, Tucson, Ariz., assignors to University Patents, Inc., Norwalk, Conn.

Continuation of Ser. No. 674, Jan. 3, 1979, abandoned, which is a continuation-in-part of Ser. No. 882,930, Mar. 1, 1978, abandoned. This application Dec. 11, 1979, Ser. No. 102,490

Int. Cl.³ C01G *3/00, 53/00, 51/00*

U.S. Cl. 423—24 **12 Claims**

1. A process for recovery of metal values from marine ferromanganese nodules comprising the steps of:

(a) leaching said nodules with an aqueous solution of oxalic acid or mixture of oxalic acid and a strong acid to thereby effect a complete dissolution of both the iron oxide and manganese dioxide matrices of said nodules and to yield a solid residue of silica and aluminosilicates and an aqueous solution containing water soluble salts of copper, nickel, cobalt, manganese, and iron;

(b) separating said solid residue from said aqueous salt solution;

(c) selectively extracting substantially all the copper from said aqueous salt solution by first adjusting the pH value of said aqueous salt solution to a value within the range of from about 6 to about 7 by addition of ammonia and thereafter contacting said aqueous salt solution with a solution in a water immiscible liquid of a liquid ion exchange chelating agent having an extraction specificity for said copper at the pH range of from about 6 to about 7;

(d) removing substantially all the iron from the resulting copper-depleted aqueous salt solution by adjusting the pH value of said aqueous salt solution to a value of about 9 by addition of ammonia to thereby precipitate said iron as $Fe(OH)_3$ and thereafter separating the precipitate from said aqueous salt solution; and

(e) extracting the nickel from the resulting copper- and iron-depleted aqueous salt solution by contacting said aqueous salt solution with a solution in a water immiscible liquid of a liquid ion exchange chelating agent having an extraction specificity for said nickel at a pH range of from about 8.3 to about 9.

7. A process for recovery of metal values from marine ferromanganese nodules which have been pretreated to remove the copper values therefrom, comprising the steps of:

(a) leaching said pretreated nodules with an aqueous solution of oxalic acid or a mixture of oxalic acid and a strong acid to thereby effect a complete dissolution of both the iron oxide and manganese dioxide matrices of said nodules and to yield a solid residue of silica and aluminosilicates and an aqueous solution containing water soluble salts of nickel, cobalt, manganese, and iron;

(b) separating said solid residue from said aqueous salt solution;

(c) removing substantially all the iron from said aqueous salt solution by adjusting the pH value of said aqueous salt solution to a value of about 9 by addition of ammonia to thereby precipitate said iron as $Fe(OH)_3$ and thereafter separating the precipitate from said aqueous salt solution; and

(d) extracting the nickel from the resulting iron-depleted aqueous salt solution by contacting said aqueous salt solution with a solution in a water immiscible liquid of a liquid ion exchange chelating agent having an extraction specificity for said nickel at a pH range of from about 8.3 to about 9.

4,259,296

RECOVERY OF CHROMIUM FROM SCRAP

Francis J. Hennion, Sussex, N.J.; John J. deBarbadillo, Warwick, and Umar M. U. Ahmad, Wappingers Falls, both of N.Y., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Dec. 27, 1979, Ser. No. 108,192

Int. Cl.³ C01G *37/00*

U.S. Cl. 423—53 **10 Claims**

1. A process for separating chromium from other constituents of a scrap metal charge, which contains chromium alloyed with at least one metal selected from the group consisting of nickel, cobalt and copper, and may contain lesser amounts of other metals, comprising:

(i) heating said charge to form a melt thereof;

(ii) introducing into said melt an oxidant selected from the group consisting of oxygen, oxygen-containing gaseous mixtures and reducible metal oxides, in a predetermined amount efficient to oxidize any reactive metals of the group consisting of aluminum, titanium, silicon, calcium, magnesium, zirconium, hafnium, tantalum and manganese which are present in said melt, and adding fluxing reagent to said melt to form a molten slag containing oxides of said reactive metals;

(iii) separating said slag from the resulting partly refined melt;

(iv) introducing into said partly refined melt a sulfiding agent selected from the group consisting of elemental sulfur and metal sulfides, in a predetermined amount effective to ensure sulfidation of substantially all of the chromium present in said melt;

(v) slow-cooling the sulfided melt at a controlled rate effec-

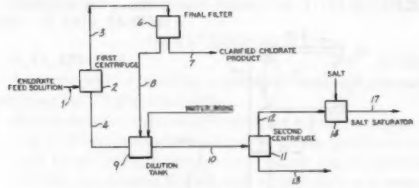
tive to ensure the formation of a coarse-grained matte which consists predominantly of a chromium sulfide;
(iv) fragmenting said cooled matte to an extent sufficient to liberate the individual phases thereof; and
(vii) subjecting said fragmented matte to at least one physical separation process to separate chromium sulfide particles from the remainder of said matte.

4,259,297

CHROMATE REMOVAL FROM CONCENTRATED CHLORATE SOLUTION BY CHEMICAL PRECIPITATION

Jerry J. Kaczur, and Sudhir K. Mendiratta, both of Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Sep. 4, 1979, Ser. No. 71,910
Int. Cl.³ C01G 37/02
U.S. Cl. 423—55 **28 Claims**



PROCESS FOR REMOVAL AND RECOVERY OF CHROMIUM PRECIPITATES

1. A process for removing hexavalent chromium from an impure aqueous alkali metal chlorate solution containing hexavalent chromium as an impurity which comprises:
(a) adjusting the pH of said impure aqueous solution to a first intermediate pH in the range from about 9 to about 13;
(b) reacting an inorganic sulfur compound selected from the group consisting of alkali metal bisulfite, alkali metal sulfite, alkali metal thiosulfate, alkali metal metabisulfite, alkaline earth metal bisulfite, alkaline earth metal thiosulfate, alkaline earth metal metabisulfite, alkali metal dithionite, alkaline earth metal dithionite, ferric sulfite, ferric thiosulfate, and mixtures thereof with said impure aqueous solution to form an aqueous slurry of solid particles of trivalent and divalent chromium compounds in an aqueous solution;
(c) adjusting the pH of said aqueous slurry of alkali metal chlorate to a second intermediate pH in the range of from about 2 to about 4;
(d) further adjusting to the pH of said aqueous slurry to a final pH in the range from about 6 to about 8; and
(e) separating said solid particles of divalent and trivalent chromium compounds from said aqueous solution, whereby hydrogen sulfide is organoleptically nondetectable.

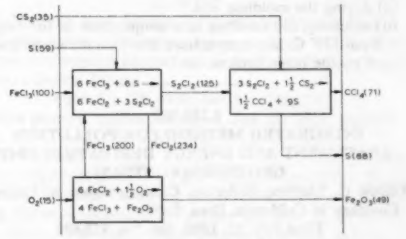
6. A process for removing and recovering precipitated chromium compounds from an aqueous alkali metal chlorate solution containing them which comprises:
(a) passing said aqueous solution containing said solid particles through a first centrifuge to form:
(i) an overflow aqueous solution having a solid particle concentration in the range from about 0.02 to about 0.05 percent, and
(ii) an underflow aqueous solution having a solid particle concentration in the range from about 10 to about 30 percent;
(b) filtering said overflow aqueous stream to form a product filtrate and a filter cake;
(c) combining said filter cake with said underflow aqueous stream of said first centrifuge to form a slurry;
(d) admixing water with said slurry to form a slurry of reduced specific gravity;
(e) passing said slurry of reduced specific gravity throug a second centrifuge to form:
(i) a second overflow aqueous solution having a solid particle concentration in the range from about 0.01 to about 0.05 percent, and
(ii) a second underflow aqueous solution having a solid particle concentration in the range from about 80 to about 90 percent;
(f) admixing said second overflow aqueous stream with an alkali metal halide to form a brine; and
(g) feeding said brine to an electrolytic cell.

4,259,298

RECOVERY OF CHLORINE VALUES FROM IRON CHLORIDE BY-PRODUCT IN CHLORINATION OF ALUMINOUS MATERIALS

John H. W. Turner, Stockport, and Charles E. E. Shackleton, London, both of England, assignors to Mineral Process Licensing Corp. B.V., The Hague, Netherlands

Continuation-in-part of Ser. No. 964,090, Nov. 27, 1978, abandoned, which is a continuation of Ser. No. 848,305, Nov. 3, 1977, Pat. No. 4,140,746. This application May 10, 1979, Ser. No. 37,718
Claims priority, application United Kingdom, May 10, 1978, 18652/78
The portion of the term of this patent subsequent to Feb. 20, 1996, has been disclaimed.
Int. Cl.³ C01G 49/06; C01F 7/56
U.S. Cl. 423—135 **11 Claims**



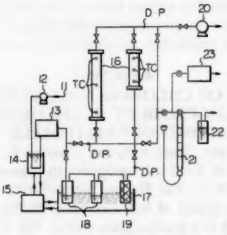
1. A method of recovering the chlorine value from iron chloride obtained from the chlorination of an aluminous material containing iron oxide which comprises the steps of:
(a) partially dechlorinating the ferric chloride from oxidation step (b) plus any ferric chloride in the iron chloride separated from the aluminous material, in the presence of a reducing agent to form products comprising ferrous chloride and a chloride compound derived from the reducing agent whose chlorine value is, either directly or after processing, suitable for recycle to the aluminous chlorination stage, and passing the ferrous chloride on to step (b); and
(b) oxidizing the ferrous chloride produced in the dechlorinating stage (a) plus any ferrous chloride in the iron chloride separated from the aluminous material, in the presence of an oxidizing agent selected from the group consisting of oxygen and oxygen-containing gases and at a temperature of between about 300° C. and 1200° C. to form products comprising ferric chloride and ferric oxide, passing the ferric chloride on to the dechlorination step (a) and removing the ferric oxide from the system: whereby the chloride value of the iron chloride separated from the aluminous material is recovered as the chloride of the reducing agent, a material which directly or indirectly is suitable for recycle to the aluminous chlorination stage.

4,259,299

PROCESS FOR REMOVING OZONE FROM AN OZONE-CONTAINING GAS

Zenzi Hagiwara, Kusatsu; Iwao Uenoyama, Izumi, and Hiroo Ishino, Kusatsu, all of Japan, assignors to Osaka Oxygen Ind Ltd., Osaka, Japan

Filed Mar. 27, 1979, Ser. No. 24,198
Claims priority, application Japan, Sep. 29, 1978, 53-120235
Int. Cl.³ B01D *53/36*
U.S. Cl. 423—210 **6 Claims**



1. A process for removing ozone from an ozone-containing gas which comprises treating the gas with a calcined molded product composed of activated carbon-zeolite mixture, the ratio of the activated carbon to the zeolite being in the range of from 0.2 to 9.0, obtained by effecting the steps of

(a) wet-blending powdery or particulate activated carbon and zeolite in the presence of an organic binder and/or an inorganic binder,

(b) molding the resulting blend,

(c) drying the molding, and

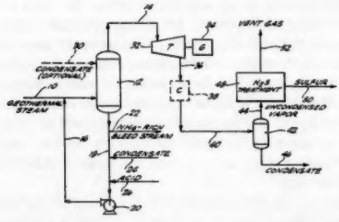
(d) calcining the molding at a temperature in the range of from 170° C. to a temperature at which network structure of zeolite is not broken.

4,259,300

INTEGRATED METHOD FOR POLLUTION ABATEMENT AND ENERGY DERIVATION FROM GEOTHERMAL STEAM

William C. Lieffers, Fullerton, Calif., assignor to Union Oil Company of California, Brea, Calif.

Filed Feb. 22, 1980, Ser. No. 123,698
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—224 **15 Claims**



1. A method for reducing the emission of sulfur-containing compounds to the atmosphere as a result of the derivation of useful energy from steam containing both hydrogen sulfide and one or more alkaline acting components, said method comprising:

(a) treating said steam so as to selectively remove at least a portion of the alkaline acting components from said steam and thereby form treated steam containing substantially all of said hydrogen sulfide;

(b) deriving useful energy from said treated steam and condensing at least a portion of said steam to form a hydrogen sulfide-containing two-phase fluid comprising steam condensate and uncondensed vapor;

(c) separating said uncondensed vapor from said steam condensate;

(d) treating said uncondensed vapor to remove hydrogen sulfide from said uncondensed vapor and thereby form a vent gas having a low concentration of sulfur-containing compounds; and

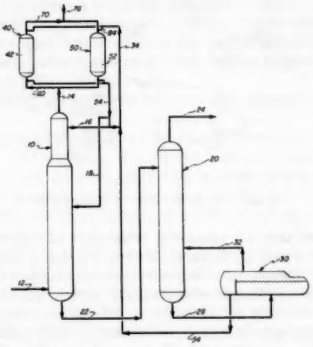
(e) venting at least a portion of said vent gas to the atmosphere.

4,259,301

REMOVAL OF ACIDIC COMPOUNDS FROM GASEOUS MIXTURES

Geoffrey R. Say, Baton Rouge, La., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 30, 1979, Ser. No. 61,663
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—228 **13 Claims**



1. A process for removing an acidic component selected from the class containing of H_2S and CO_2 from a gaseous mixture including the acidic component, the process comprising:

A. contacting the gaseous mixture with an aqueous amine absorbing solution to thereby remove a portion of the acidic component from the gaseous mixture;

B. thereafter passing the gaseous mixture through an adsorption zone containing an adsorbent selected from the class consisting of activated carbon and silica gel to adsorb additional quantities of the acidic component from the gaseous mixture; and

C. periodically regenerating the adsorbent by passing through the adsorption zone a liquid amine regenerating solution to thereby remove the adsorbed acidic component.

4,259,302

REGENERABLE AMMONIA SCRUBBER

Murray Katz, Newington; Gary A. Gruver, South Windsor, and H. Russell Kunz, Vernon, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 968,597, Dec. 11, 1978, abandoned. This application Nov. 8, 1979, Ser. No. 92,314
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—237 **11 Claims**

1. In the continuous removal of ammonia gas from a gas stream, the steps of:

providing dual beds of solid, porous material wetted with an acid;

removing ammonia gas from the gas stream by reacting the ammonia in the gas stream with the acid to form an ammoniated salt of the acid on said porous material by alter-

nately passing the gas stream through one and then the other of said beds said beds being maintained at a first temperature during said step of reacting;

regenerating each bed during the time it is not receiving the gas stream by reacting oxygen with said salt to form nitrogen, said acid, and water by passing an oxygen containing gas therethrough, said beds being maintained at a second temperature during regenerating insufficient to decompose said salt and evaporate any significant amount of ammonia from said beds during regenerating.

4,259,303

METHOD OF AND SYSTEM FOR TREATING WASTE ANESTHETIC GAS

Osamu Nakaji, Sakura; Seisuke Takashima, and Seishiro Nakamura, both of Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Oct. 15, 1979, Ser. No. 84,830

Claims priority, application Japan, Oct. 17, 1978, 53-128235; Mar. 29, 1979, 54-37947

Int. Cl.³ B01D *53/36*

U.S. Cl. 423—239 **10 Claims**

1. A method of treating waste anesthetic gas containing laughing gas (N_2O), comprising:

passing said waste anesthetic gas over a catalyst comprising at least one metal oxide selected from the group consisting of ferric oxide, cobalt oxide, cupric oxide, chromium oxide, manganese dioxide and nickel oxide at a temperature of 250° C. to 650° C. to decompose said laughing gas to nitrogen and oxygen.

4,259,304

ACTIVATION OF COAL

Peter Steiner, Edison, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Sep. 7, 1979, Ser. No. 73,339

Int. Cl.³ B01D *5/00;* **B01J** *21/18*

U.S. Cl. 423—244 **25 Claims**

1. A method of preparing activated coal comprising:

introducing into a reaction zone coal which has been partially oxidized with SO_2;

contacting said coal with superheated steam; and then

impregnating said coal with vanadium.

25. In a method of removing SO_2 from a gas containing SO_2 wherein said gas is contacted with an adsorbent and the adsorbent is regenerated, the improvement wherein said adsorbent is a coal containing at least about 0.01 (wt.)% vanadium and is prepared by:

contacting with superheated steam a coal which has been oxidized with SO_2 and then

impregnating said steam activated coal with vanadium.

4,259,305

SUBSTANTIALLY PURE CYCLIC PHOSPHONITRILIC CHLORIDE TRIMER

Larry W. Anderson, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 71,392, Aug. 30, 1979, abandoned. This application Dec. 31, 1979, Ser. No. 108,511

Int. Cl.³ C01B *25/10*

U.S. Cl. 423—300 **10 Claims**

1. A process for the separation of cyclic phosphonitrilic chloride trimer from a mixture containing said trimer as well as other phosphonitrilic chlorides which comprises contacting said mixture with a ketone so that a separable fraction having a phosphonitrilic chloride constituent consisting essentially of said trimer is formed, the amount of said ketone based on the weight of said mixture falling within the range of about 20:1 to about 1:20.

4,259,306

SYNTHESIS OF ZSM-39

Bruce P. Pelrine, Trenton, N.J., assignor to Mobile Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 84,684, Oct. 15, 1979. This application Jun. 6, 1980, Ser. No. 156,906

Int. Cl.³ C01B *33/00, 33/20, 33/28*

U.S. Cl. 423—325 **9 Claims**

1. A method for synthesizing crystalline zeolite ZSM-39 which has the composition expressed in terms of mole ratios of oxides in the anhydrous state as follows: (0–2.5)M_2/nO: (0–2.5)Al_2O_3: 100 SiO_2 wherein M is at least one cation having a valence n, said zeolite being characterized by the X-ray diffraction pattern as set out in Table I herein, which comprises the steps of

a. preparing a reaction mixture comprising sources of alkali metal oxide, an oxide of silicon, water, pyrrolidine, and a tetraureacobalt (II) complex and having a composition, in terms of mole ratios of oxides, falling within the following ranges:

SiO_2/Al_2O_3 = 5–infinity

H_2O/SiO_2 = 1–3000

OH^-/SiO_2 = 0.001–10

M/SiO_2 = 0.01–3

R/SiO_2 = 0.01–5

R'/SiO_2 = 0.005–2

wherein M is an alkali or alkaline earth metal cation, R is pyrrolidine and R′ is a tetraureacobalt (II) cation, and

b. maintaining said mixture at a temperature of from between about 25° C. and about 250° C. until crystals of said zeolite are formed.

4,259,307

PROCESS FOR PRODUCING CARBON FIBERS

Kunio Maruyama, Okayama, Japan, assignor to Sumitomo Chemical Company, Limited and Japan Exlan Company, Ltd., both of Osaka, Japan

Filed Jan. 25, 1980, Ser. No. 115,275

Claims priority, application Japan, Jan. 26, 1979, 54-8456

Int. Cl.³ D01F *9/22*

U.S. Cl. 423—447.4 **9 Claims**

1. An improved process for producing carbon fibers characterized by thermally stabilizing and carbonizing or graphitizing acrylic fibers containing 0.1–5 weight %, based on the weight of the fibers, of a straight chain silicone substance and further containing 0.1–5 weight %, based on the weight of the fibers, of a chemical substance which is selected from glycerine, polyethylene glycol, polypropylene glycol, alkyl derivatives thereof, and mixtures or compounds of two or more of these substances, and which generates only a residue less than 5 weight % under the action of heat at 240° C. for one hour.

4,259,308

METHOD FOR PRODUCING CARBON BLACK

Robert H. Kallenberger, and John E. Anderson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 12, 1979, Ser. No. 19,948

Int. Cl.³ C01B *31/02;* **C09C** *1/48*

U.S. Cl. 423—449 **8 Claims**

1. A method for manipulating the heat supplied from a furnace to a carbon black dryer so as to produce a dried carbon black product at a desired temperature comprising the steps of:

establishing a first signal representative of the heat required per unit time to maintain said dried carbon black product at a desired temperature;

establishing a second signal representative of the efficiency of said carbon black dryer;

responsive to said first signal and said second signal, establishing a third signal representative of the heat which must be supplied per unit time from said furnace to said carbon

black dryer to produce said dried carbon black product at the desired temperature;

establishing a fourth signal representative of the heat, per unit of the fuel supplied to said furnace, which is given up in said carbon black dryer;

responsive to said third signal and said fourth signal, establishing a fifth signal representative of the flow rate of said fuel to said furnace required to produce said dried carbon black product at the desired temperature; and

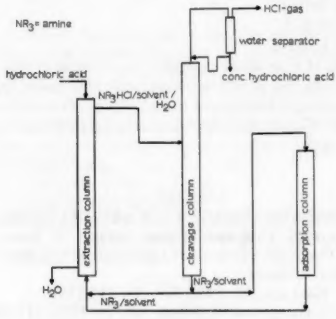
manipulating the flow rate of said fuel in response to said fifth signal.

4,259,309

METHOD FOR OBTAINING GASEOUS HYDROGEN CHLORIDE FROM DILUTE AQUEOUS HYDROCHLORIC ACID

Alfred Coenen; Kurt Kosswig, both of Marl, and Ferdinand von Praun, Haltern, all of Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Aug. 8, 1979, Ser. No. 64,633
Int. Cl.³ C01B 7/07
U.S. Cl. 423—481 **14 Claims**



1. In a process for obtaining gaseous hydrogen chloride by extracting dilute aqueous hydrochloric acid with amines, comprising:

(a) extracting aqueous hydrochloric acid with a mixture of an amine and an inert, water-immiscible solvent boiling at not less than 120° C., said amine comprising a tertiary alkylamine having 14 to 36 carbon atoms in the nitrogen-bonded side chains, said side chains including at most one nitrogen-bonded methyl group and at least one nitrogen-bonded aliphatic radical containing at least 6 carbon atoms, the acid constant K_a of said amine being less than 10^{-3};

(b) carrying out a first distillation of said extract, condensing resulting vapors, removing water continuously from a two phase condensate and returning an organic phase to said first distillation;

(c) carrying out a second distillation under reflux of said extract after water has been removed, liberating said gaseous hydrogen chloride at the top of the column of said second distillation and taking it off; and

(d) recycling the solvent containing the amine to said extracting; the improvement comprising:

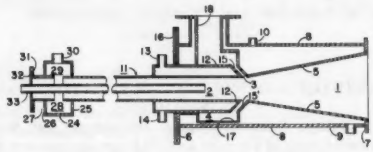
(e) passing at least a portion of the mixture of amine, solvent and any included impurities over an adsorbent before being employed in stage (a), said adsorbent selected from the group consisting of Type 1 aluminum oxide having a specific surface area of about 100 to about 400 m^2/g, silica gel having a specific surface area of about 500 to about 700 m^2/g and silanized silica gel having a specific surface area of about 300 to about 400 m^2/g, said surface area being measured by the BET method.

4,259,310

PROCESS FOR THE MANUFACTURE OF TITANIUM DISULFIDE

Thomas W. Clapper, Oklahoma City, Okla., assignor to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed Jan. 28, 1980, Ser. No. 115,993
Int. Cl.³ C01B 17/00
U.S. Cl. 423—561 R **16 Claims**



1. In a process for the vapor-phase reaction of titanium tetrachloride with vaporous sulfur containing gas in an elongated titanium disulfide-forming reaction zone provided with an inlet for the introduction of preheated vaporous sulfur containing gas, an inlet for the introduction of preheated titanium tetrachloride, and an entrance portion, said inlet for the introduction of said vaporous sulfur containing gas comprising a supply conduit, the downstream end of which is spaced from the entrance portion of said reaction zone to define a circumferentially extending inlet which comprises said inlet for the preheated titanium tetrachloride, the improvements which comprise:

introducing said preheated titanium tetrachloride by passing said titanium tetrachloride with a downstream component of velocity into said reaction zone at a velocity of at least 50 feet per second through said titanium tetrachloride inlet which is provided with an upstream face extending towards the axis of said conduit and reaction zone at an angle within the range of from about 15° to 165° with respect to said axis from an upstream direction and a downstream face extending towards said axis at an angle within the range of about 15° to 165° with respect to said axis from a downstream direction, provided that when both of said upstream and downstream faces extend toward the axis of the reaction zone at an angle greater than 80° with respect to said axis the supply conduit for the vaporous sulfur containing gas terminates in a tapered section;

providing an established flow of said preheated vaporous sulfur containing gas in said supply conduit before said vaporous sulfur containing gas is introduced into said reaction zone by passing said gas, at a velocity of at least 50 feet per second, through a supply conduit having a diameter at its downstream end no greater than the diameter of the entrance portion of said reaction zone and the downstream end portion of said conduit over a length equal to at least five times the diameter of its downstream end having a straight axis, being coaxial with the reaction zone and being substantially non-divergent in the direction of flow of the vaporous sulfur containing gas;

reacting said titanium tetrachloride and said vaporous sulfur containing gas in said reaction zone to produce titanium disulfide;

directing inert particulate refractory material introduced through at least one nozzle upon the inside surface of both the reaction zone and the vaporous sulfur containing gas supply conduit that are adjacent to said inlet for the titanium tetrachloride to substantially reduce or prevent deposition of titanium disulfide on said inside surfaces; and

recovering said titanium disulfide.

4,259,311
DECOMPOSITION OF $ALCL_3.6H_2O$ IN H_2 ATMOSPHERE

Ishwarlal D. Shah, Edina, Minn., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

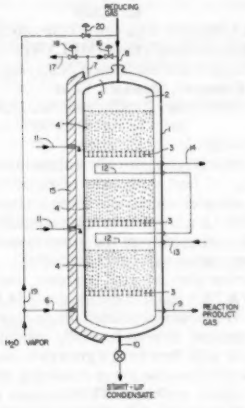
Filed Jul. 24, 1979, Ser. No. 60,102
Int. Cl.³ C01F 7/30
U.S. Cl. 423—625 **3 Claims**

1. A process for decomposition of aluminum chloride hexahydrate consisting essentially of initially heating the hexahydrate feed in a reaction vessel at a temperature of about 200° to 600° C. in an atmosphere of nitrogen or a mixture of nitrogen with hydrogen or steam for a period sufficient to reduce the chlorine content of the feed to about 10 percent or less, and subsequently heating the feed of reduced chlorine content at a temperature of about 700° to 1100° C. in an atmosphere consisting essentially of hydrogen or a mixture of hydrogen and an inert gas or steam for a period sufficient to form an alumina product having a residual chlorine content of less than about 0.01 percent.

4,259,312
PROCESS AND APPARATUS FOR CATALYTICALLY REACTING A REDUCING GAS AND WATER VAPOR

Claus Flockenhaus, Essen-Haarzopf, and Erich Hackler, Kettwig, both of Fed. Rep. of Germany, assignors to Didier Engineering GmbH, Essen and Thyssengas GmbH, Duisburg-Hamborn, both of, Fed. Rep. of Germany

Continuation of Ser. No. 895,464, Apr. 11, 1978, abandoned. This application Oct. 3, 1979, Ser. No. 81,615
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1977, 2717101
Int. Cl.³ B01J 3/03, 12/00
U.S. Cl. 423—659 **20 Claims**



1. A process for catalytically reacting water vapor with a gas containing at least one reducing component in a pressure reactor, to thereby produce a desired gaseous reaction product, said process comprising:

providing a pressure reactor including an outer pressure container and an inner container positioned within said pressure container, said inner container being inwardly spaced from said pressure container to define therebetween an intermediate space entirely surrounding said inner container, the interior of said inner container being isolated from said intermediate space;

providing within said inner container a catalyst required for the reaction;

introducing directly into said inner container, without introduction into said intermediate space and without contacting the inner surface of said outer pressure container, a mixture of the water vapor required for the reaction and the gas containing reducing components required for the reaction, whereby said water vapor and gas react in the presence of said catalyst to form a desired reaction product;

simultaneously introducing pure water vapor only into said intermediate space and passing said pure water vapor through said intermediate space; and

removing said reaction product from said inner container.

4,259,313
FLUORESCENT LABELS

David S. Frank, Rochester, and Michael W. Sundberg, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 952,424, Oct. 18, 1978, which is a continuation-in-part of Ser. No. 865,274, Dec. 28, 1977, abandoned. This application Aug. 16, 1979, Ser. No. 66,962
Int. Cl.³ G01N 31/00, 31/22, 33/48, 33/00
U.S. Cl. 424—8 **6 Claims**

1. A composition comprising protein adsorbed or covalently bound to an aqueous-stabilized fluorescent label comprising a fluorescent rare earth chelate incorporated into a polymeric bead which is derived from a loaded latex wherein said rare earth chelate comprises up to about 7.5 percent by weight of said beads and said loaded latex has a polymeric discontinuous phase which consists essentially of polymer polymerized from one or more ethenic monomers and has an aqueous continuous phase and exhibits essentially no visible coagulation or settling out when 250 ml of the latex containing from about 10 to about 20 weight percent dispersed phase is stirred at 25° C. into an equal volume of acetone over a 1 minute period and subsequently allowed to stand at about 25° C. for 10 minutes.

4,259,314
METHOD AND COMPOSITION FOR THE PREPARATION OF CONTROLLED LONG-ACTING PHARMACEUTICALS

Hans Lowey, 7 Deerfield La., Mamaroneck, N.Y. 10543

Filed Dec. 10, 1979, Ser. No. 102,227
Int. Cl.³ A61K 9/02, 9/20, 9/22, 47/00
U.S. Cl. 424—19 **28 Claims**

1. A method for preparing a controlled long-acting release dry pharmaceutical formulation containing a therapeutic agent and a dry carrier comprising the steps of:

(a) forming a dry carrier comprising 80 to 95%, of said dry carrier, of hydroxypropyl methylcellulose and 20 to 5% of hydroxopropyl cellulose,

(b) drying said carrier to a moisture content of not more than 1%,

(c) mixing the dry carrier with a therapeutically effective amount of a therapeutic agent to form the dry pharmaceutical formulation, and

(d) compressing said dry pharmaceutical formulation into a suitable form.

4,259,315
CONTROLLED RELEASE POTASSIUM DOSAGE FORM

Irwin Lippmann; Shankar D. Popli; Larry G. Miller, and Louis G. Bell, all of Richmond, Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Filed Jun. 13, 1980, Ser. No. 159,335
Int. Cl.³ A61K 9/48, 9/50, 33/14
U.S. Cl. 424—37 **10 Claims**

1. A pharmaceutical composition comprising a gelatin capsule containing therein a mixture comprising microencapsulated potassium salt and hydrophilic surfactant external to said microencapsulated salt.

4,259,316

ORAL COMPOSITION FOR CARIES PROPHYLAXIS

Syozi Nakashima, Ninomiya; Tosiyuki Ozawa, Minamiashigara; Takashi Ujiie, Ninomiya; Takeshi Naganuma, Odawara; Satoshi Hayashi, Hiratsuka, and Yoshihito Ochiai, Fujisawa, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Sep. 28, 1979, Ser. No. 79,801
Claims priority, application Japan, Jul. 31, 1979, 54-97627
Int. Cl.[3] A61K *7/18*
U.S. Cl. 424—52 5 Claims

1. An oral composition for caries prophylaxis comprising stannous fluoride and a phytic acid compound, the content of stannous fluoride being 0.1 to 4% by weight of the total amount of the composition, the content of the phytic acid compound being 0.5 to 10% by weight of the total amount of the composition, the molar ratio of the phytic acid compound to stannous fluoride being in the range of from 0.025:1 to 2.5:1, and the composition being acidic.

4,259,317

PREPARATION FOR THE PROTECTION OF EMERGING SUGAR BEETS AGAINST DAMPING-OFF, AND METHOD OF ITS PRODUCTION

Dasa Vesely, Prague, and Slavomil Hejdanek, Roxtoky u Prahy, both of Czechoslovakia, assignors to Vyzkummy ustav rostlinne vyroby, Prague, Czechoslovakia

Filed Jul. 5, 1979, Ser. No. 54,793
Claims priority, application Czechoslovakia, Jul. 5, 1978, 4462-78
Int. Cl.[3] A01N *63/00*
U.S. Cl. 424—93 4 Claims

1. A preparation for the protection of emerging sugar beets against damping-off and for simultaneously stimulating the growth of seedlings when applied in the amount of at least 100,000 oospores on each of the seeds, such preparation comprising a dried and powdered grain substrate fermented with *Pythium oligandrum* Drechsler and containing at least about 1,000,000 oospores per gram.

4,259,318

POISON IVY RELIEF COMPOSITION

Nanda V. Duhe, Cypress, and Donald L. Hendrix, Bellaire, both of Tex., assignors to University of Houston, Central Campus, Houston, Tex.

Filed Mar. 2, 1978, Ser. No. 882,899
Int. Cl.[3] A61K *37/48*
U.S. Cl. 424—94 15 Claims

1. A method for preventing dermatitis resulting from skin contact with urushiol toxin which comprises applying to the affected skin area an effective amount of the enzyme laccase derived from the fungus *Polyporus versicolor.*

4,259,319

ANTIBIOTIC AUROMOMYCIN, AND PROCESS FOR PRODUCTION THEREOF

Hamao Umezawa; Tomio Takeuchi; Masaaki Ishizuka, all of Tokyo; Kiyoshi Watanabe, Akashi; Toshiaki Yamashita, Kakogawa; Noriyuki Naoi, and Takayoshi Hidaka, both of Kobe, all of Japan, assignors to Kanegafuchi Chemical Industry Company, Limited, Osaka and Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, both of, Japan

Filed Aug. 25, 1978, Ser. No. 936,835
Claims priority, application Japan, Aug. 25, 1977, 52-102323
Int. Cl.[3] H61K *35/00*
U.S. Cl. 424—117 1 Claim

1. An antitumor antibiotic effective against transplanted tumors, auromomycin, having the following properties:

(a) it crystallizes as yellow plate-like crystals;

(b) it inhibits *Staphylococcus aureus, Bacillus subtilis, Sarcina lutea, Escherichia coli, Proteus rettgeri* and *Klebsiella pneumoniae* and inhibits the growth of Ehrlich ascites carcinoma, ascites sarcoma 180 and L1210 leukemia in mice;

(c) it is readily soluble in water but insoluble in organic solvents;

(d) its ultraviolet absorption spectrum shows an absorption maximum at 270–275 mμ and 350–360 mμ in a neutral to acidic aqueous solution and at 270–275 mμ and 340 mμ in an alkaline aqueous solution, and in any of these solutions, the spectrum has a shoulder at 290 mμ;

(e) its infrated absorption spectrum has main absorption bands at 3300, 2980, 1650, 1540, 1460, 1400, and 1240 cm^{-1}, and slight absorptions at 3100, 1160, 1100 and 930 cm^{-1};

(f) it does not show a definite melting point nor a definite decomposition point, browns and carbonizes while foaming, and carbonizes completely at 260° C;

(g) it shows a $[\alpha]_D^{20}$ of −280° in 1% aqueous solution;

(h) its optical rotatory dispersion spectrum in aqueous solution shows a valley at 280 mμ and 350 mμ;

(i) it decolorizes a potassium permanganate solution, is positive in Folin-Lowry, xanthoproteic, Ehrlich, biuret, and ninhydrin reactions and is negative in phenol sulfuric acid, anthrone, orcinol, Elson-Morgan, and Molisch reactions;

(j) it has an isoelectric point of pH 5.4;

(k) its elementary analysis values are carbon 47.06%, hydrogen 6.62%, nitrogen 14.66%, sulfur 3.25% and oxygen 25.80%;

(l) its molecular weight, as measured by a gel filtration method, is about 12,500;

(m) the amino acids detected by its hydrolysis are aspartic acid, threonine, serine, glutamic acid, proline, glycine, alanine, cystine, valine, isoleucine, leucine, tyrosine, phenylalanine, tryptophan, lysine and histidine;

(n) its N-terminal is alanine; and

(o) the pH range over which it is stable in aqueous solution is 5 to 9.

4,259,320

CONCURRENT USE OF AVOPARCIN WITH GROWTH-PROMOTING IMPLANTS IN CATTLE

Roger L. De Lay, Hamilton Square, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Mar. 2, 1979, Ser. No. 17,004
Int. Cl.[3] A61K *35/00*
U.S. Cl. 424—118 7 Claims

1. A method for synergistically enhancing the growth rate and efficiency of feed utilization of ruminants; comprising, parenterally administering to said ruminants weighing between 180 kg and 500 kg growth-enhancing amount of a compound or composition selected from the group consisting of:

(1) progesterone plus estradiol benzoate;

(2) testosterone plus estradiol benzoate; and

(3) 3,4,5,6,7,8,9,10,11,12-decahydro-7,14,16-trihydroxy-3-methyl-1H-2-benzoxacyclotetradecin-1-one;

and in conjunction therewith, orally administering to said ruminants, in or with their feed, a growth-enhancing amount of antibiotic selected from the group consisting of: AV290, antibiotic AV290 sulfate, antibiotic AV290-syntan complex, antibiotic AV290-alkyl sulfate, or antibiotic AV290 alkylated derivative and mixtures thereof.

4,259,321

COMPOSITIONS AND METHODS FOR CONTROLLING COCCIDIOSIS

Hiroshi Oikawa, Kusatsu; Ken Katagiri, Ikeda; Harumoto Kawaguchi, Mie; Tetsuo Kitabatake, Kobe, and Koji Nakamoto, Higashiosaka, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Jul. 24, 1979, Ser. No. 60,057
Claims priority, application Japan, Aug. 11, 1978, 53-98455
Int. Cl.[3] A61K *31/34*
U.S. Cl. 424—120 8 Claims

1. A poultry feed composition for controlling coccidiosis in poultry which comprises as an active ingredient about 0.001

weight percent to about 0.5 weight percent of Antibiotic K-41 or a non-toxic salt thereof.

4,259,322

METHOD OF TREATMENT OF TUBERCULOSIS

Helong Lim, 662 Union St., Vancouver, British Columbia, Canada (V6A 2B9)

Filed Mar. 20, 1978, Ser. No. 887,996
Int. Cl.³ A61K *33/18*
U.S. Cl. 424—150 **3 Claims**

1. A method for treating tuberculosis in a patient comprising administering to a patient having tuberculosis, by injection to the patient, an effective amount of killing tubercle bacillus medication of the following composition:

an aqueous solution of the ingredients of calcium gluconate and sodium iodine, in which the proportions by weight of the said ingredients in a said aqueous solution of approximately 100 cc. comprise

a quantity of calcium gluconate of approximately 10 grams and

a quantity of sodium iodine of approximately 4 grams.

4,259,323

POTASSIUM CHLORIDE EMULSION

Joseph A. Ranucci, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 24, 1980, Ser. No. 133,184
Int. Cl.³ A61U *31/00, 31/14, 31/365, 31/685*
U.S. Cl. 424—153 **7 Claims**

1. An improved potassium chloride water-in-oil emulsion comprising, per liter:

(a) from about 500 ml. to about 700 ml. water;

(b) from about 8 percent to about 24 percent weight to volume sorbitol;

(c) from about 100 ml. to about 300 ml. of mineral oil, U.S.P.;

(d) from about 5 percent to about 15 percent by weight potassium chloride;

(e) from about 1 percent to about 5 percent weight to volume purified bentonite;

(f) from about 10 ml. to about 30 ml. of a mixture of monoglycerides and diglycerides of 16 to 18 carbon atom unsalurated fatty acids;

(g) from about 0.01 percent to about 1.0 percent weight to volume polysorbate 80;

(h) from 0 to about 3 percent by weight lecithin;

(i) from 0 to about 5 percent by weight ascorbyl palmitate; and

(j) pharmaceutically acceptable preservatives, flavors and sweetening agents.

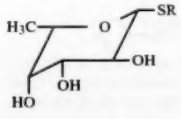
4,259,324

IMMUNOLOGIC ADJUVANT THIO GLYCOSIDE COMPOUNDS AND COMPOSITIONS

Mitree M. Ponpipom, Branchburg; Tsung-Ying Shen, Westfield, and Robert L. Bugianesi, Colonia, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 31, 1979, Ser. No. 62,586
Int. Cl.³ A61K *31/70, 31/705;* C07H *5/10*
U.S. Cl. 424—180 **8 Claims**

1. A compound of the formula



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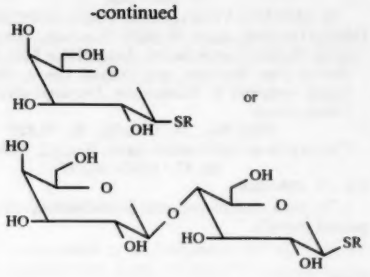
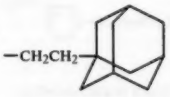
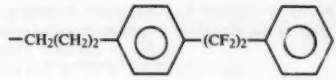
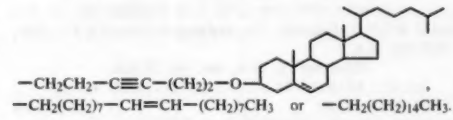


wherein R is







$-CH_2CH_2-C\equiv C-(CH_2)_2-O$

$-CH_2(CH_2)_7-CH=CH-(CH_2)_7CH_3$ or $-CH_2(CH_2)_{14}CH_3$.

$-CH_2(CH_2)_7-CH=CH-(CH_2)_7CH_3$ or $-CH_2(CH_2)_{14}CH_3$.

7. An immunologic adjuvant composition comprising an antigenic material and a compound of claim **1** in an amount effective to exert an adjuvant effect.

4,259,325

1,3-DIBENZOIC ACID ESTERS OF 17α-ETHYNYL-7α-METHYL-1,3,5(10)-ESTRATRIENE-1,3,17β-TRIOL

Klaus Prezewowsky; Hermann Steinbeck, and Rudolf Wiechert, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft (A.G.), Berlin and Bergkamen, Fed. Rep. of Germany

Filed Apr. 10, 1979, Ser. No. 28,744
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1978, 2818164
Int. Cl.³ C07J *1/00;* A61K *31/56*
U.S. Cl. 424—238 **12 Claims**

1. The 1,3-dibenzoic acid ester of 17α-ethynyl-7α-methyl-1,3,5(10)—estratrien-1,3,17β-triol, and the corresponding esters wherein the phenyl ring of the benzoic acid residue is substituted by chlorine, bromine, iodine, methyl, ethyl, hydroxy, amino, methoxy or ethoxy.

5. A method of achicving estrogenic effects in a mammal which comprises administering to the mammal an estrogenically effective amount of a compound of claim **1**.

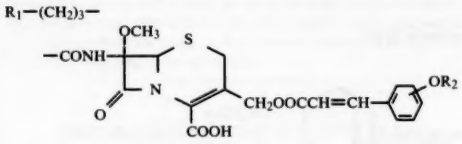
4,259,326

7α-METHOXYCEPHALOSPORIN DERIVATIVES

Hiroshi Gushima, Ageo; Shunichi Watanabe, Omiya; Takeshi Saito, Tokyo; Toshio Sasaki, Toda; Hideo Eiki, Omiya; Yoshihiko Oka, Kawagoe, and Takashi Osono, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Nov. 27, 1979, Ser. No. 97,823
Claims priority, application Japan, Dec. 12, 1978, 53-153871
Int. Cl.[3] C07D *501/20*
U.S. Cl. 424—246 **6 Claims**

1. 7α-Methoxycephalosporin derivatives represented by the general formula



wherein R_1 represents a carboxy group or an α-aminocarboxymethyl group and R_2 represents a hydrogen atom or a sulfo group or the pharmaceutically acceptable salts thereof.

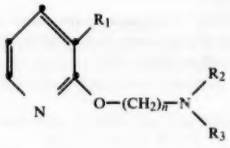
4,259,327

SUBSTITUTED AMINOALKOXYPYRIDINES, COMPOSITIONS AND USE THEREOF

John J. Baldwin, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 2, 1979, Ser. No. 25,826
Int. Cl.[3] A61K *31/44, 31/535;* **C07D** *213/85, 413/12*
U.S. Cl. 424—248.57 **10 Claims**

1. Compounds having the formula



and pharmaceutically acceptable salts thereof
wherein
n is 2 or 3,
R_1 is —CN and
R_2 and R_3 when separate, are C_1–C_6 alkyl and when joined with N form a heterocyclic piperidinyl, piperazinyl, N-C_1–C_4 alkylpiperazinyl or morpholino group.

9. A pharmaceutical composition for treating hypertension containing a therapeutically effective amount of a compound of claim **1**.

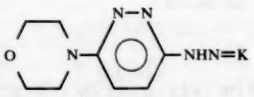
4,259,328

MORPHOLINO PYRIDAZINYLHYDRAZONES

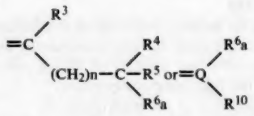
Geza Szilagyi; Endre Kasztreiner; Judit Kosary; Peter Matyus; Zsuzsa Huszti; György Cseh; Agnes Kenessey; Laszlo Tardos; Edit Kosa; Laszlo Jaszlits; Sandor Elek; Istvan Elekes, and Istvan Polgari, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt, Budapest, Hungary

Filed Jun. 12, 1978, Ser. No. 914,778
Claims priority, application Hungary, Jun. 13, 1977, GO 1372
Int. Cl.[1] C07D *295/00;* **A61K** *31/535*
U.S. Cl. 424—248.53 **15 Claims**

1. A compound of the formula:



wherein
K is a group of the formula:



wherein
R^3 is hydrogen, alkyl having 1 to 10 carbon atoms, cycloalkyl having 3 to 7 carbon atoms, or alkoxycarbonyl having 1 to 4 carbon atoms in the alkoxy moiety;
R^4 and R^5 are each hydrogen, alkyl having 1 to 4 carbon atoms, or alkoxycarbonyl having 1 to 4 carbon atoms in the alkoxy moiety;
R_a^6 is a carboxyl or $—CO_2R^9$ wherein R^9 is alkyl having 1 to 9 carbon atoms;
n is 0, 1, 2, 3, 4 or 5
Q is a mono- or bicyclic alkyl having 3 to 10 carbon atoms; and
R^{10} is alkyl having 1 to 6 carbon atoms, or a pharmaceutically acceptable salt thereof.

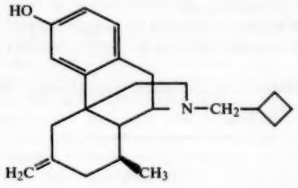
4,259,329

17-CYCLOBUTYLMETHYL-3-HYDROXY-8β-METHYL-6-METHYLENE MORPHINANE, AND METHODS OF TREATING PAIN WITH THEM

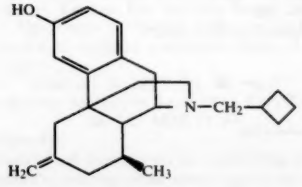
Michael P. Kotick, and Joseph O. Polazzi, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 85,774, Oct. 17, 1979, abandoned. This application Apr. 21, 1980, Ser. No. 138,102
Int. Cl.[3] A61K *31/485;* **C07D** *221/28*
U.S. Cl. 424—260 **6 Claims**

1. 17-cyclobutylmethyl-3-hydroxy-8β-methyl-6-methylene morphinane of the formula:



4. A therapeutic method of treating pain in an individual requiring such treatment which comprises administering to such individual an effective amount of a compound characterized by the formula:

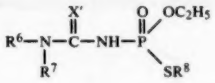


4,259,330
NEMATOCIDAL PHOSPHORAMIDATES

Harold E. Aller, Norristown; Edward E. Kilbourn, Chalfont; Ernest D. Weiler, Ambler, and William D. Weir, Levittown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 1, 1976, Ser. No. 662,751
Int. Cl.³ A01N *57/28, 57/32*
U.S. Cl. 424—200 **3 Claims**

1. A method of controlling nematodes which comprises applying directly to the nematodes or to the loci to be freed of or protected from attack by such nematodes, a nematocidally effective amount of a compound of the formula



wherein R^6 is

(a) a hydrogen atom,
(b) a (C_1-C_8) alkyl group,
(c) a (C_5-C_7) cycloalkyl group;

R^7 is a hydrogen atom;

R^6 and R^7 taken together with the nitrogen atom to which they are attached, form a piperidino group optionally substituted with up to two (C_1-C_4) alkyl groups;

R^8 is a n-propyl group, an isobutyl group or a sec-butyl group; and

X' is an oxygen or sulfur atom.

4,259,331
OXYTETRACYCLINE COMPOSITIONS

William W. Armstrong, Mill Neck, N.Y., assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 16, 1979, Ser. No. 30,419
Int. Cl.³ A61K *31/65, 31/79*
U.S. Cl. 424—227 **7 Claims**

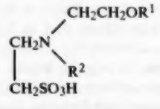
1. An aqueous oxytetracycline composition comprising from about 20 to 30% w/v of oxytetracycline, from about 40 to 60% of 2-pyrrolidone, from about 0.8 to 0.95 molar proportions of magnesium oxide based on said oxytetracycline and from about 0.15 to 0.3 molar proportions based on said oxytetracycline of a pharmaceutically acceptable calcium compound soluble in said composition, said composition having a pH value in the range of from about 7.5 to 9.5.

4,259,332
NOVEL TAURINE DERIVATIVES

Raffaele Passoni, Milan, and Vittorio Camboni, Cigni-Brughierio, both of Italy, assignors to Laboratorio Chimico Farmaceutico CAUSYTH S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 47,040, Jun. 11, 1979, abandoned. This application Feb. 11, 1980, Ser. No. 120,063
Claims priority, application Italy, Dec. 7, 1979, 28020 A79
Int. Cl.³ A61K *31/24, 31/325, 31/455;* **C07C** *69/86*
U.S. Cl. 424—230 **8 Claims**

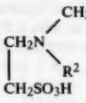
1. A taurine derivative of general formula (I):



(I)

wherein R^1 is selected from the group consisting of nicotinoyl, 3,4,5-trimethoxybenzoyl and acetylsalicyloyl groups and R^2 is selected from the group consisting of R^1 as defined and $-CH_2CH_2OR^1$ wherein R^1 is as defined hereinabove; and pharmaceutically acceptable salts thereof.

5. A pharmaceutical composition with antilipemic activity, said composition containing an effective amount of a taurine derivative of the general formula (I)



(I)

in which R^1 is nicotinoyl or 3,4,5-trimethoxybenxoyloxy or a salt thereof, together with a pharmaceutically acceptable carrier or diluent.

4,259,333
CEPHALOSPORINES

Ernst T. Binderup, Tastrup, Denmark, assignor to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab), Ballerup, Denmark

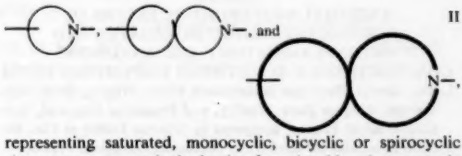
Filed Oct. 6, 1978, Ser. No. 949,111
Claims priority, application United Kingdom, Oct. 28, 1977, 45107/77; Dec. 20, 1977, 53064/77
Int. Cl.³ C07D *501/36, 501/20*
U.S. Cl. 424—246 **25 Claims**

1. An antibiotic compound of the formula

I

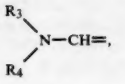
in which the radical

stands for the groupings:

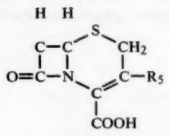


II

representing saturated, monocyclic, bicyclic or spirocyclic ring systems, respectively, having from 4 to 11 carbon atoms in total; —A— stands for a straight or branched, saturated or unsaturated C_1 to C_6 aliphatic hydrocarbon radical optionally including a phenyl moiety, and where —A— optionally can be substituted with an amino radical; R_1 stands for hydrogen, or lower alkyl having from 1 to 4 carbon atoms; R_2 stands for hydrogen, lower alkyl or monoacyl derived from a mono- or dibasic carboxylic acid, sulphuric acid, a sulphonic acid, a sulphinic acid, phosphoric acid, or a phosphonic acid, or R_2 is a radical selected from the group consisting of carbamoyl, guanyl and guanylcarbamoyl radicals which are unsubstituted or substituted with lower alkyl or phenyl; or R_1 and R_2 together with the nitrogen atom form a monocyclic, saturated ring having from 4 to 8 carbon atoms or an azido group; or R_1 and R_2 together represent a radical of the formula



in which R_3 and R_4 each stands for hydrogen, lower alkyl, phenyl or phenyl-lower-alkyl, or in which R_3 and R_4 together with the nitrogen atom form a monocyclic, saturated ring having from 4 to 8 carbon atoms; p is 1, and when A includes an aryl moiety, p is 0 or 1; Ceph. stands for the Δ^3-cephem-4-carboxylic acid radical of the formula III



III

in which R_5 is halogen, methoxy or the group —CH=CH—COOH, or a $CH_2R'_5$ group representing a 3-position substituent of the 7-acylamino-Δ^3-cephem-4-carboxylic acid series; non-toxic salts of the compounds of the formula I with pharmaceutically acceptable, non-toxic acids or bases; or pharmaceutically acceptable, non-toxic, esters of the compounds of formula I.

4,259,334

PIPERAZINES AND THERAPEUTIC UTILITY

Jean C. Pascal, Cachan, and Henri Pinhas, Paris, both of France, assignors to Laroche Navarron S.A., Puteaux, France

Filed Apr. 5, 1979, Ser. No. 27,475

Claims priority, application United Kingdom, Apr. 27, 1978, 16744/78

Int. Cl.[3] **A61K** *31/495;* **C07D** *295/08*

U.S. Cl. 424—250 **3 Claims**

1. A process for the treatment of cardiac rhythm disorders which comprises administering to a human in need thereof a therapeutic composition containing an anti-arrhythmic effective amount of 1-[2-(2,6-dimethyl-phenoxy)-ethyl]-4-(benzimidoyl)-piperazine or a pharmaceutically acceptabel acid addition salt thereof.

3. 1-[2-(2,6-Dimethyl-phenoxy)-ethyl]-4-(benzimidoyl)-piperazine and its pharmaceutically acceptable acid addition salts.

4,259,335

1-METHYL-4-PIPERIDINOL ESTERS OF 4-QUINOLINYLAMINO BENZOATES AND ANTIINFLAMMATORY AND ANALGESIC COMPOSITIONS AND METHODS EMPLOYING THEM

Laszlo Beregi, Boulogne Billancourt; Pierre Hugon, Rueil Malmaison; Jacques Bure, Neuilly, and Francoise Degrand, Versailles, all of France, assignors to Science Union et Cie, Societe Francaise de Recherche Medicale, Suresnes, France

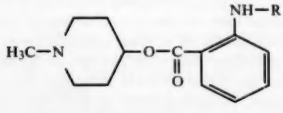
Filed Aug. 6, 1979, Ser. No. 64,091

Claims priority, application Switzerland, Aug. 1, 1978, 9229/78

Int. Cl.[3] **A61K** *31/47;* **C07D** *401/12*

U.S. Cl. 424—258 **12 Claims**

1. A compound selected from the group consisting of: 1-methyl-4-piperidinol esters of the formula:



(I)

in which R is selected from the group consisting of

7-chloro-4-quinolyl, 7-trifluoromethyl-4-quinolyl and 8-trifluoromethyl-4-quinolyl; and

physiologically tolerable salts thereof.

5. An anti-inflammatory composition comprising an anti-inflammatorily effective amount of a compound of claim **1** and a pharmaceutically acceptable carrier.

7. An analgesic composition comprising an analgetically effective amount of a compound of claim **1** and a pharmaceutically acceptable carrier.

9. A method of reducing inflamation in a living body affected by acute or chronic inflammation which comprises administering an anti-inflammatory effective amount of a compound of claim **1** to said body.

11. A method of reducing pain in a living body affected by acute or chronic inflammation which comprises administering an analgetically effective amount of a compound of claim **1** to said body.

4,259,336

4-HYDROXY-2H-[1]-BENZOTHIENO [2,3-E]-1,2-THIAZINE-3-CARBOXAMIDE-1,1-DIOXIDES AND SALTS THEREOF

Wolfhard Engel; Günter Trummlitz; Ernst Seeger; Walter Haarmann; Günther Engelhardt, and Rainer Zimmermann, all of Biberach, Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

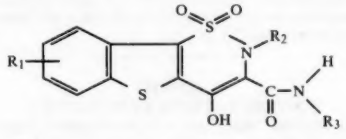
Continuation-in-part of Ser. No. 68,673, Aug. 22, 1979, abandoned. This application Oct. 22, 1979, Ser. No. 86,743

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1978, 2838377

Int. Cl.[3] **C07D** *513/04;* **A61K** *31/38*

U.S. Cl. 424—246 **9 Claims**

1. A compound of the formula



wherein R_1 is hydrogen, halogen or alkyl of 1 to 3 carbon atoms;

R_2 is hydrogen or alkyl of 1 to 3 carbon atoms; and

R_3 is phenyl, naphthyl, pyridyl, pyrimidyl, pyrazinyl, pyridazinyl, oxazolyl, isooxazolyl, thiazolyl, isothiazolyl, benzothiazolyl, 4,5,6,7-tetrahydro-benzothiazolyl, cyclopentathiazolyl or 1,3,4-thiadiazolyl, where each of these substituents may be substituted with one or two alkyls of 1 to 6 carbon atoms, halogen, hydroxyl, trifluoromethyl, halophenyl or alkoxy of 1 to 3 carbon atoms;

or a non-toxic, pharmacologically acceptable salt thereof formed with an inorganic or organic base.

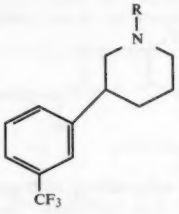
9. The method of preventing or relieving thrombosis or counteracting inflammation and fever in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective antithrombotic or antiphlogistic amount of a compound of claim **1**.

4,259,337
METHOD FOR USING M-TRIFLUOROMETHYLPHENYL-PIPERIDINES

Lucien Nedelec, Le Raincy; Jacques Guillaume, Aulnay-sous-Bois, and Claude Dumont, Nogent-sur-Marne, all of France, assignors to Roussel Uclaf, Paris, France

Continuation-in-part of Ser. No. 768,484, Feb. 14, 1977, abandoned. This application May 12, 1977, Ser. No. 796,317
Claims priority, application France, Feb. 13, 1976, 76 03933
Int. Cl.[3] A61K *31/445;* C07D *211/18*
U.S. Cl. 424—267 4 Claims

1. A method of relieving depression in warm-blooded animals comprising administering to warm-blooded animals an antidepressant effective amount of at least one compound selected from the group consisting of m-trifluoromethylphenyl-piperidine of the formula



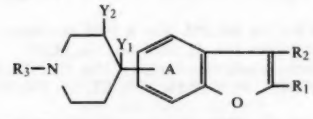
wherein R is selected from the group consisting of hydrogen, branched or straight chain alkyl of 1 to 5 carbon atoms, alkenyl of 3 to 5 carbon atoms and phenylalkyl of 1 to 3 alkyl carbon atoms and their non-toxic, pharmaceutically acceptable acid addition salts.

4,259,338
BENZOFURANYL-TETRAHYDROPYRIDINES AND -PIPERIDINES, THEIR ACID ADDITION SALTS AND ANTIDEPRESSANT PREPARATIONS THEREOF

Romeo Paioni, Reinach; Walter Schilling, Himmelried, and Raymond Bernasconi, Oberwill, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 49,006, Jun. 15, 1979, abandoned. This application Apr. 14, 1980, Ser. No. 140,405
Claims priority, application Switzerland, Jun. 22, 1978, 6823/78
Int. Cl.[3] A61K *31/445, 31/44;* C07D *405/02*
U.S. Cl. 424—267 26 Claims

1. A compound of the formula I



(I)

in which R_1 and R_2 independently of one another are hydrogen or lower alkyl or together are lower alkylene, R_3 is hydrogen, lower alkyl, lower alkenyl, lower alkynyl, cyclo-lower alkyl or cyclo-lower alkyl-lower alkyl and Y_1 and Y_2 are each hydrogen or together are an additional bond, and the ring A is not further substituted or is further substituted by lower alkyl, lower alkoxy, halogen with an atomic number of not more than 35, cyano or hydroxyl, or a pharmaceutically acceptable acid addition salt thereof.

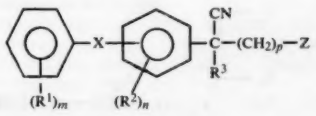
26. A method for the treatment of emotional depression in a warm-blooded animal in need of such treatment comprising enteral or parenteral administration to said animal of a therapeutically effective amount of a compound according to claim 1 having the formula I defined in claim 1, or of a pharmaceutically acceptable acid addition salt thereof.

4,259,339
CYANOARALKYLHETEROCYCLIC COMPOUNDS

George A. Miller, Maple Glen, and Hak-Foon Chan, Doylestown, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 840,072, Oct. 6, 1977, Pat. No. 4,167,576. This application Feb. 28, 1979, Ser. No. 16,053
Int. Cl.[3] A01N *43/64;* C07D *249/08*
U.S. Cl. 424—269 6 Claims

1. A compound of the formula



wherein

R^1 and R^2 are independently selected from the group consisting of hydrogen, halogen, (C_1 to C_4) alkyl, (C_1 to C_4) alkoxy, nitro, cyano, trihalomethyl, mono (C_1 to C_4) alkylamino and di (C_1 to C_4) alkylamino;

R^3 is selected from the group consisting of hydrogen, (C_1 to C_{12}) alkyl, (C_3 to C_8) cycloalkyl, (C_2 to C_8) alkenyl, (C_2 to C_8) alkynyl, (C_5 to C_7) cycloalkenyl, (C_6 to C_{10}) aryl and (C_7 to C_{11}) aralkyl or (C_6 to C_{10}) aryl and (C_7 to C_{11}) aralkyl substituted with up to three substituents selected from the group consisting of halogen, (C_1 to C_4) alkyl, (C_1 to C_4) alkoxy, and nitro;

Z is a heterocyclic moiety selected from the group consisting of 1-(1,2,4-triazole) and 4-(1,2,4-triazole);

X is selected from the group consisting of CH_2, O, S, SO and SO_2;

m and n are independently zero or the integer 1 or 2;

p is an integer from 1 to 5; and the agronomically acceptable acid addition salts thereof.

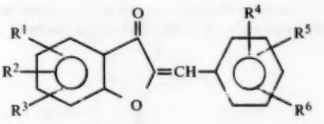
5. A fungicidal composition which comprises an agriculturally acceptable carrier and as the active ingredient a fungicidally effective amount of a compound according to claim 1.

4,259,340
AURONE DERIVATIVES

Stephen R. Baker, Eversley; William B. Jamieson, Woking, and William J. Ross, Lightwater, all of England, assignors to Lilly Industries Limited, London, England

Filed Aug. 31, 1979, Ser. No. 71,515
Claims priority, application United Kingdom, Sep. 13, 1978, 36705/78
Int. Cl.[3] C07D *307/83, 405/02, 405/10*
U.S. Cl. 424—269 15 Claims

1. A compound of the formula



in which in which R^1,R^2,R^3,R^4,R^5 and R^6 are the same or different and can each represent hydrogen, halogen, C_{1-6} alkyl, C_{1-6} alkoxy, C_{3-8} cycloalkyl, optionally substituted phenyl, C_{1-6} haloalkyl, amido, amino, cyano, hydroxy, nitro, C_{2-4} alkenyl, carboxyl, tetrazol-5-yl or —CH=CHCOOH; or in which R^1 and R^2 taken together represent a group of formula —CH=CH—CH=CH—; provided that at least one of R^1,R^2,R^3,R^4,R^5 and R^6 is carboxyl, tetrazol-5-yl or —CH=CHCOOH; or a pharmaceutically-acceptable salt or ester thereof.

4,259,341

DI- AND TRI-SUBSTITUTED THIAZOLES

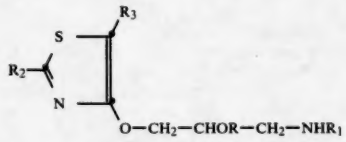
John J. Baldwin, and Gerald S. Ponticello, both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 802,403, Jun. 1, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 960,280

Int. Cl.[3] C07D *277/20*

U.S. Cl. 424—270 **18 Claims**

1. Compounds having the formula



and pharmaceutically acceptable salts thereof, wherein

R is hydrogen, C_2–C_{12} alkanoyl benzoyl, naphthoyl, methylbenzoyl or phenylbenzoyl,

R_1 is C_1–C_{12} alkyl,

R_2 is hydrogen, CF_3, C_6–C_{10} carbocyclic aryl selected from phenyl, methylphenyl, halophenyl, nitrophenyl, methoxyphenyl, indanyl and naphthyl, C_1–C_6 alkyl, C_1–C_6 alkylthio, C_1–C_6 alkylsulfinyl, C_1–C_6 alkylsulfonyl, thienyl and furfuryl,

R_3 is C_1–C_6 alkyl, —$COOC_1$–C_6 alkyl, $COOC_6$–C_{12} aryl, or C_6–C_{10} carbocyclic aryl wherein aryl is selected from phenyl, methylphenyl, biphenylyl and indanyl cyano or CF_3

provided that when R_2 is phenyl, R_3 is other than C_1–C_6 alkyl or $COOC_1$–C_6 alkyl.

4,259,342

ANTIANGINAL TREATMENT WITH AZEPINE DERIVATIVES

Lothar Benedikter, Biberach an der Riss, Fed. Rep. of Germany; Walter Kobinger; Ludwig Pichler, both of Vienna, Austria; Hanns Ihrig, and Gerhart Griss, both of Biberach an der Riss, Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

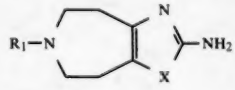
Filed May 10, 1979, Ser. No. 37,747

Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820808

Int. Cl.[3] A61K *31/42, 31/425*

U.S. Cl. 424—270 **3 Claims**

1. The method of treating angina pectoris in a human patient, which comprises administering to said patient an effective antianginal amount of a compound of the formula



wherein

R_1 is hydrogen, unsubstituted or hydroxyl-substituted alkyl of 1 to 4 carbon atoms; alkyl; or unsubstituted or halo-, methyl-, methoxy- or trifluoromethyl-substituted benzyl; and

X is oxygen or sulfur;

or a non-toxic, pharmaceutically acceptable acid addition salt thereof.

4,259,343

OXAZOLE CARBAMATES, FORMULATIONS AND ASTHMA TREATMENT

William J. Ross, Lightwater; Alec Todd, Wokingham, and John P. Verge, Henley-on-Thames, all of England, assignors to Lilly Industries Limited, London, England

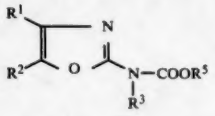
Division of Ser. No. 864,900, Dec. 27, 1977, Pat. No. 4,175,131, which is a continuation of Ser. No. 678,015, Apr. 19, 1976, abandoned. This application Feb. 5, 1979, Ser. No. 9,335

Claims priority, application United Kingdom, May 2, 1975, 18320/75

Int. Cl.[3] A61K *31/42*

U.S. Cl. 424—272 **10 Claims**

1. A method of treating an animal suffering from an allergic condition which comprises administering to an afflicted animal a chemotherapeutically effective amount of an oxazole of the formula



wherein:

R^1 and R^2 are independently hydrogen, C_{1-6} alkyl, C_{1-4} hydroxyalkyl, C_{3-8} cycloalkyl, C_{3-6} alkanoyloxyalkyl, phenyl, halophenyl, trifluoromethylphenyl, methylphenyl, methoxyphenyl, or nitrophenyl;

R^3 is hydrogen, C_{1-6} alkyl, C_{2-6} alkenyl, C_{3-6} alkoxyalkyl, C_{3-8} cycloalkyl, C_{3-8} cycloalkyl-C_{1-4} alkyl, phenyl-C_{1-4} alkyl, halophenyl-C_{1-4} alkyl, trifluoromethylphenyl-C_{1-4} alkyl, methylphenyl-C_{1-4} alkyl, methoxyphenyl-C_{1-4} alkyl, nitrophenyl-C_{1-4} alkyl, phenyl-C_{2-4} alkenyl, halophenyl-C_{2-4} alkenyl, trifluoromethylphenyl-C_{2-4} alkenyl, methylphenyl-C_{2-4} alkenyl, methoxyphenyl-C_{2-4} alkenyl, or nitrophenyl-C_{2-4} alkenyl; and

R^5 is C_{1-6} alkyl, C_{3-8} cycloalkyl, C_{2-4} alkenyl, phenyl, halophenyl, trifluoromethylphenyl, methylphenyl, methoxyphenyl, nitrophenyl, or C_{1-6} haloalkyl.

4,259,344

SULFUR-CONTAINING BENZIMIDAZOLE DERIVATIVES

Csaba Gönczi; Dezso Korbonits; Pal Kiss; Endre Palosi; Gergely Heja; Ida Szvoboda nee Kanzel; Judit Cser nee Kun; Maria Szomor nee Wundele; György Körmöczi, and Andras Kelemen, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

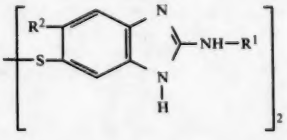
Division of Ser. No. 904,292, May 9, 1978, abandoned. This application Jun. 22, 1979, Ser. No. 51,247

Claims priority, application Hungary, May 10, 1977, CI1735; May 11, 1977, CI1736; May 16, 1977, CI1738; Jul. 29, 1977, CI1759

Int. Cl.[3] C07D *235/30*; A61K *31/415*

U.S. Cl. 424—273 B **12 Claims**

1. A compound of the formula



wherein

R^1 is hydrogen or —$COOR^5$;

R^5 is C_1 to C_4 alkyl;

R^2 is hydrogen, halogen, C_1 to C_6 alkyl, trifluoromethyl or $-OR^3$; and

R^3 is C_1 to C_4 alkyl, phenyl, naphthyl, phenyl-C_1 to C_4 alkyl or naphthyl-C_1 to C_4 alkyl, where the phenyl or naphthyl moiety is unsubstituted or substituted by halogen, lower alkyl, lower alkoxy, lower alkylthio, carboxy, nitro, hydroxy, cyano, C_1 to C_4 alkylsulfinyl or C_1 to C_4 alkylsulfonyl; or a pharmaceutically acceptable salt thereof.

4,259,345

2-(IMIDAZOL-1-YLMETHYL)PYRROLES

Peter E. Cross, Canterbury, and Roger P. Dickinson, Dover, both of England, assignors to Pfizer Inc., New York, N.Y.

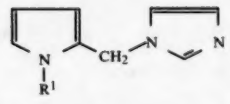
Filed Feb. 21, 1980, Ser. No. 123,242

Claims priority, application United Kingdom, Feb. 24, 1979, 06617/79

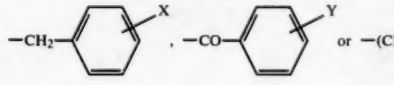
Int. Cl.[3] **A61K** *31/415;* **C07D** *403/06*

U.S. Cl. 424—273 R **8 Claims**

1. A compound of the formula



wherein R^1 is lower cycloalkyl, lower cycloalkyl-lower alkyl, lower alkenyl-lower alkyl, lower alkanoyl, phenyl, lower cycloalkylcarbonyl, or a group of the formula



wherein

X is hydrogen, carboxy or lower alkoxycarbonyl;

Y is hydrogen, lower alkyl, lower alkoxy or halogen,

n is an integer of from 1 to 4; and

Z is cyano, carboxy or lower alkoxycarbonyl; and the pharmaceutically acceptable acid addition salts thereof.

7. A method of selectively inhibiting the action of thromboxane synthetase enzyme in an animal comprising administering to said animal an effective amount of a compound of claim 1.

4,259,346

BRADYCARDIAC PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE

Helmut Stähle; Herbert Köppe; Werner Kummer, all of Ingelheim am Rhein, Fed. Rep. of Germany; Walter Kobinger, Vienna, Australia; Christian Lillie, Vienna, Australia; Ludwig Pichler, Vienna, Australia; Wolfgang Hoefke, Budenheim, and Wolfram Gaida, Ingelheim am Rhein, both of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

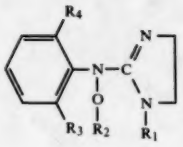
Filed Dec. 14, 1979, Ser. No. 103,584

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855306

Int. Cl.[3] **A61K** *31/415*

U.S. Cl. 424—273 R **1 Claim**

1. The method of lowering the heart rate in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective bradycardiac amount of a compound of the formula



wherein

R_1 is hydrogen or lower alkyl,

R_2 is hydrogen, lower alkyl, hydroxy-lower alkyl, chlorohydroxy-propyl, 2,3-epoxy-propyl, alkoxyalkyl, aminoalkyl, N-substituted aminoalkyl, benzyl or phenethyl,

R_3 is hydrogen or halogen, and

R_4 is halogen or methyl, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

4,259,347

CONTROL OF PHYTOPATHOGENS USING DINITROANILINE COMPOUNDS

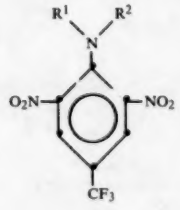
James R. Beck, Indianapolis, and Joseph A. Yahner, New Palestine, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 878,370, Feb. 16, 1978, Pat. No. 4,180,568, which is a division of Ser. No. 719,299, Aug. 31, 1976, Pat. No. 4,091,096, which is a continuation-in-part of Ser. No. 668,360, Mar. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 589,312, Jun. 23, 1975, abandoned. This application Apr. 26, 1979, Ser. No. 33,660

Int. Cl.[3] **A01N** *33/02, 37/275, 43/02*

U.S. Cl. 424—304 **8 Claims**

1. A method for reducing the incidence and severity of grape downy mildew which comprises applying to the foliage of the host plant a fungicidally-effective amount of a dinitroaniline compound having one of the following formulae:



(I)

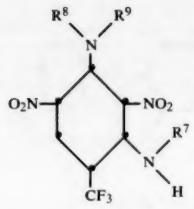
wherein

R^1 is H, C_2–C_3 alkyl, chloroethyl, cyanoethyl, C_3–C_4 alkenyl or halo C_3–C_4 alkenyl;

when R^1 is H, R^2 is $N(R^3)_2$, normal C_3–C_6 alkyl, branched C_4–C_7 alkyl containing no tertiary carbon atoms, 1-hydroxy-2-propyl or methallyl;

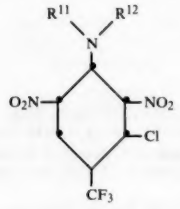
when R^1 is not H, R^2 is 3-chloro-n-butyl, C_3–C_4 alkenyl, halo C_3–C_4 alkenyl, chloroethyl, cyclopropylmethyl, cyanoethyl, hydroxyethyl, n-C_3H_7, or epoxypropyl;

each R^3 is independently C_1–C_3 alkyl;



(III)

wherein
R^7 is H, CN, C_1–C_3 alkyl or C_2–C_3 alkanoyl;
R^8 is H or C_1–C_3 alkyl;
when R^8 is H, R^9 is $N(R^{10})_2$, C_1–C_6 normal or branched alkyl containing no tertiary carbon atoms, or C_3–C_4 alkenyl;
when R^8 is C_1–C_3 alkyl, R^9 is C_1–C_3 alkyl, halo C_3–C_4 alkenyl, propargyl or C_3–C_4 alkenyl; and
each R^{10} is independently C_1–C_3 alkyl;



(IV)

wherein
R^{11} is H or C_1–C_3 alkyl;
when R^{11} is H, R^{12} is $N(R^{13})_2$, C_1–C_4 normal or branched alkyl containing no tertiary carbon atoms, or C_3–C_4 alkenyl;
when R^{11} is C_1–C_3 alkyl, R^{12} is C_1–C_3 alkyl or C_3–C_4 alkenyl; and
each R^{13} is independently C_1–C_3 alkyl.

4,259,348

PESTICIDAL ESTERS OF AMINO ACIDS

Richard J. Anderson, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Filed May 2, 1980, Ser. No. 145,924
Int. Cl.[3] **A01N** *37/34;* **C07C** *121/78*
U.S. Cl. 424—304 **2 Claims**

1. The compound (S)-α-cyano-3-phenoxybenzyl (R)-2-(2-fluoro-4-trifluoromethylphenylamino)-3-methylbutanoate.

2. A method for controlling insects or acarids which comprises applying to said insect or acarid or their habitat a pesticidally effective amount of the diastereomer (S)-α-cyano-3-phenoxybenzyl (R)-2-(2-fluoro-4-trifluoromethylphenylamino)-3-methylbutanoate.

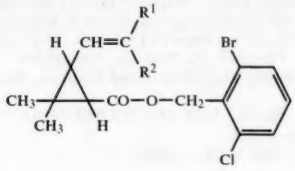
4,259,349

HALOBENZYL ESTER PESTICIDES

Michael J. Bull, Lower Halstow, England, assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 52,158, Jun. 26, 1979, abandoned. This application Oct. 5, 1979, Ser. No. 82,242
Claims priority, application United Kingdom, Oct. 13, 1978, 40420/78; Sep. 17, 1979, 32152/79
Int. Cl.[3] **A01N** *53/00;* **C07C** *69/743, 121/66*
U.S. Cl. 424—305 **6 Claims**

1. A compound of the formula



wherein R^1 and R^2 are both fluorine or chlorine, said compound having the cis/trans optical configuration or the cis optical configuration, substantially free of other optical isomers.

6. A method of contolling insect pests which comprises applying to the pests on their habitat an insecticidally effective amount of a compound according to claim **1**.

4,259,350

IODOPROPARGYL DERIVATIVES, THEIR USE AND PREPARATION

Yasuhiro Morisawa; Kiyoshi Konishi, and Mitsuru Kataoka, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Mar. 13, 1979, Ser. No. 20,165
Claims priority, application Japan, Mar. 15, 1978, 53-29546; Dec. 15, 1978, 53-154673
Int. Cl.[3] **A01N** *37/10, 37/34, 43/02, 43/40*
U.S. Cl. 424—308 **17 Claims**

1. A method of protecting a degradable organic material from fungal or insect attack, which comprises applying to or admixing with said material an iodopropargyl compound of the formula in an amount sufficient to protect said material:

$$IC{\equiv}CCH_2OR^1$$

wherein R^1 represents a benzoyl group or a substituted benzoyl group;

and wherein said substituted benzoyl group contains one or two substituents on the benzene ring selected from the group consisting of halogen, alkyl having 1–4 carbon atoms, alkoxy having 1–4 carbon atoms, cyano, nitro, sorboyl and benzyloxycarbonyl groups.

4,259,351

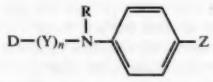
Patent Not Issued For This Number

4,259,352
4-[CYCLOALKYL- OR CYCLOALKENYL-AMINO(CYCLOALKYL- OR CYCLOALKENYL-ALKENYL)AMINO]PHENYL COMPOUNDS, USEFUL AS HYPOLIPIDEMIC AND ANTIATHEROSCLEROTIC AGENTS

Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 1, 1979, Ser. No. 8,467
Int. Cl.³ A61K *31/135, 31/205;* C07C *95/08*
U.S. Cl. 424—316 **18 Claims**

1. The method of inhibiting atherosclerotic lesion development in a mammal comprising administering to said mammal an effective lesion development inhibiting amount of a compound of Formula I below:



I

wherein Z is:
(a)

wherein J is selected from the group consisting of hydrogen, loweralkyl, and loweralkyl bearing one or more acyl;
R is selected from the group consisting of hydrogen, or a group convertible in vivo thereinto, such as methyl;
n is either zero or one;
Y is a divalent radical selected from the group consisting of unbranched or branched C_1-C_{13} alkylene or alkenylene and is either unsubstituted or substituted with at least one C_1-C_4 alkyl group;
and D is selected from the group consisting of C_3-C_{16} cycloalkyl or C_4-C_{17} cycloalkenyl and is either unsubstituted or substituted with at least one C_1-C_{13} alkyl, C_4-C_8 cycloalkyl, decahydronaphthyl, methylene, ethylidene, or isopropylidene group;
with the proviso that the total number of carbon atoms in D and Y shall not exceed twenty; and with the further proviso that when n is 1, D is not an unsubstituted cyclopropyl nor a cyclopropyl substituted with at least one C_1-C_{13} alkyl; and
the pharmaceutically acceptable non-toxic acid addition and cationic salts thereof; and mixtures thereof.

4,259,353
INFUSION SOLUTIONS FOR THE TREATMENT OF HEPATIC ENCEPHALOPATHY AND METHOD OF USING THEM

Günter Kleinberger, Vienna, Austria, assignor to Leopold & Co., Chem. Pharm. Fabrik Gesellschaft m. b. H., Graz, Austria

Filed Nov. 3, 1978, Ser. No. 957,204
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1977, 2750159
Int. Cl.³ A61K *31/195*
U.S. Cl. 424—319 **2 Claims**

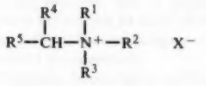
1. A method of treating hepatic encephalopathy in human patients comprising intravenously infusing a solution consisting essentially of a sterile aqueous solution of L-valine as the sole amino acid, said solution having a pH-value within the physiologically acceptable range of 7.0 to 7.5 which has been adjusted by a base acceptable for infusion, and said solution having a concentration of L-valine of 2–5 g/100 ml of the solution.

4,259,354
METHOD OF TREATING ARRHYTHMIA

Bryan B. Molloy, and Mitchell I. Steinberg, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 896,067, Apr. 13, 1978, abandoned. This application Jun. 25, 1979, Ser. No. 51,579
Int. Cl.³ A61K *31/14*
U.S. Cl. 424—329 **9 Claims**

1. A method of treating re-entrant arrhythmias in humans suffering from such arrhythmias and in need of treatment or in humans suspected of developing a re-entrant arrhythmia comprising administering to such subject an antiarrhythmically effective dose of a compound of the formula



wherein:
R^1 and R^2 independently are C_1–C_2 alkyl;
R^3 is n-C_1–C_8 alkyl;
R^4 is hydrogen or methyl;
R^5 is n-C_5–C_9 alkyl; and
X is a therapeutically acceptable anion.

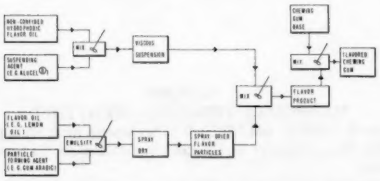
4,259,355
CHEWING GUM CONTAINING FLAVOR COMPOSITION AND FLAVOR COMPOSITION THEREFOR

Don Marmo, Farmingdale, and Frank L. Rocco, Richmond Hill, both of N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 17,580, Mar. 5, 1979, abandoned. This application Aug. 3, 1979, Ser. No. 63,593
The portion of the term of this patent subsequent to Jan. 4, 1994, has been disclaimed.
Int. Cl.³ A23G *3/30*
U.S. Cl. 426—5 **6 Claims**

1. A chewing gum comprising particles of a composition consisting essentially of:
a. From about 3 up to about 7 parts by weight of a non-confined hydrophobic flavor oil;

b. From about 3 up to about 7 parts by weight of a hydrolytically releaseable flavor oil physically entrapped in an edible solid material selected from the group consisting of gelatin, dextrin, gum acacia and modified food starch, said solid material having a particle size of from about 5 microns up to about 400 microns, said physically entrapped flavor oil being organoleptically compatible with said non-confined hydrophobic flvor oil;



c. From about 0.1 up to about 1 part by weight of a solid suspending agent which is hydroxypropyl cellulose having a molecular weight of from about 50,000 up to about 800,000

and an all-enveloping mass of a chewable gum base within which said particles are substantially uniformly distributed whereby, as the chewing gum is chewed, the flavor is released at high flavor intensity substantially evenly and uniformly over an extended chewing time.

4,259,356

METHOD FOR THE PRODUCTION OF PROTEIN CONCENTRATE

Kurt Wallgren, and Tage Nilsson, both of Gothenburg, Sweden, assignors to Mjölkcentralen Arla Ekonomisk Förening, Gothenburg, Sweden

Filed Nov. 20, 1978, Ser. No. 962,335

Claims priority, application Sweden, Nov. 23, 1977, 7713274

Int. Cl.³ A23J *1/20*

U.S. Cl. 426—42 **9 Claims**

1. A method for the production of a protein concentrate useful in the production of margarine having a low calorie content and a high content of proteins which comprises:

acidifying a raw material selected from the group consisting of skimmed milk, an aqueous solution of skim milk powder and a mixture thereof to a pH of 4–5 to precipitate proteins therefrom, said proteins comprising casein and whey proteins,

raising the acidified raw material including said precipitated proteins to a temperature of about 35°–65° C. and maintaining said temperature in a first heating stage for a period of at least 15 minutes depending upon the particular temperature employed, thereby conditioning the precipitated proteins,

quickly raising the temperature of the acidified and conditioned raw material including said precipitated proteins in a second heating stage at least 10° C. to a temperature of about 60°–95° C. to inactivate bacteria and enzymes,

immediately after reaching the intended higher temperature, concentrating the precipitated proteins to provide a liquid protein concentrate comprising both casein and whey proteins and

cooling the resulting liquid protein concentrate, to storing temperature.

4,259,357

STABILIZED MILKPROTEINS-CONTAINING COMPOSITIONS

Simon Van Kranenburg, Capelle an der Ijssel, Netherlands, assignor to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

Filed May 29, 1979, Ser. No. 43,512

Claims priority, application United Kingdom, May 31, 1978, 25165/78

Int. Cl.³ A23K *1/18*

U.S. Cl. 426—42 **34 Claims**

1. A process for producing a dry composition, which on dilution with water yields a homogenous aqueous composition, said process for producing said dry composition comprising: admixing (a) from 10 to 30 wt. % fat, (b) from 10 to 30 wt. % protein, (c) from 10 to 50 wt. % carbohydrates said composition having at least part of the protein and the carbohydrates water-insoluble, (d) at least 0.5 wt. % of a casein stabilizer which has been treated with an effective amount of a proteolytic enzyme under conditions such that the K-casein moiety contained in said casein is hydrolysed without forming peptides having a molecular weight of below 10^4 and (e) from 0.1 to 10 wt. %, based on the amount of protein, of a water-soluble or water-dispersible salt which binds calcium and magnesium ions.

4,259,358

PREPARATION OF FOOD PRODUCTS

Iain F. Duthie, Cobham, England, assignor to Agricultural Production and Vegetable Products, Ltd., Surrey, England

Filed Feb. 4, 1975, Ser. No. 547,029

Claims priority, application United Kingdom, Feb. 14, 1974, 6843/74; Apr. 19, 1974, 17373/74

Int. Cl.³ A23L *1/204, 2/38;* A23J *1/00*

U.S. Cl. 426—46 **29 Claims**

1. A process for preparing food product containing readily-assimilable nutrients in the form of protein and low molecular weight carbohydrates comprising,

treating an aqueous liquid slurry, having a pH of 8 or less, of comminuted vegetable tissue selected from the group consisting of ground legume material and flaked legume material, the weight ratio of said legume material to said aqueous liquid being from 1:1 to 1:15 on a dry matter basis, said legume material being derived from edible seeds of leguminous plants belonging to the family Leguminosae and having a protein content of from 15 to 48% and a starch content of from 35 to 75% and having a lipid content of 0.5 to 5.0% on a dry matter basis or being derived from legumes of the genus Lupinus having a protein content of from 40 to 50%,

with from 0.25 to 5.0 grams, per kilogram of dry legume material, of an amylolytic enzyme preparation having from 1000 to 1500 SKB units of α-amylase activity per gram at a temperature of 40° to 100° C. and for a period of from 2 to 120 minutes to liquefy and hydrolyse starch contained in said legume material to dextrins, adjusting the pH of the slurry to a value of from the natural value to 10, stirring for a period sufficient to solubilise protein contained in said legume material and adding lipid material in the presence of an emulsifying agent and in a manner such as to form a stable dispersion of lipid globules coated with solubilised protein, said natural value being the pH of the mixture obtained when whole or hulled legume materials is slurried with aqueous liquid of about neutral pH, adding to the amylolytic enzyme-treated legume material an aldehyde under conditions such as to form a reaction product of the aldehyde and protein derived from said legume material around the particles or globules of lipid material, said aldehyde/protein reaction product being substantially insoluble at a pH greater than 5 and substantially soluble at a pH less than 4.

4,259,359

HIGH PROTEIN WHEAT PRODUCT

Arnold Spicer, Santa Ponsa, Spain, assignor to New Generation Foods, Inc., Reno, Nev.

Continuation-in-part of Ser. No. 852,288, Nov. 17, 1977, abandoned. This application Nov. 6, 1978, Ser. No. 956,661
Int. Cl.[3] A21D 2/14
U.S. Cl. 426—62 21 Claims

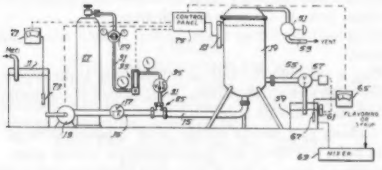
1. A method for preparing an expanded food product comprising grinding whole wheat having at least 11 percent protein, on a dry basis, to provide a ground whole wheat material, forming a dough from said ground wheat material, said dough having an edible acid present at a level of from about 0.01 to about 0.05 percent by weight equivalent lactic acid, working said dough while heating said dough, subjecting said heated dough to high temperature-short time heating conditions in a high pressure zone said acid and said working providing extensibility to said protein, extruding said heated dough from said high pressure zone to a low pressure zone, thereby effecting expansion of said dough, and drying said expanded dough to provide an expanded food product of desired moisture.

4,259,360

DEOXYGENATION OF LIQUIDS

Jim M. Venetucci, Forest Park, and John C. Orfe, Lynwood, both of Ill., assignors to Liquid Carbonic Corporation, Chicago, Ill.

Filed Apr. 16, 1979, Ser. No. 30,656
Int. Cl.[3] G01N 33/14
U.S. Cl. 426—231 1 Claim



1. A method of significantly reducing the dissolved oxygen content of water and preparing a flavored beverage therefrom, which method comprises

causing said water to flow as a stream through a confined region at velocity of between about 10 ft./sec. and 20 ft./sec. and at a pressure of at least about 2 atmospheres,

monitoring the dissolved oxygen content of said incoming water stream,

injecting nitrogen into said stream as bubbles having an average size of not greater than about 5 mm.,

adjusting the amount of nitrogen being injected as a result of changes in the D.O. level being monitored to strip enough oxygen from the water to reduce its dissolved oxygen content to below about 2 ppm.,

maintaining said stream in laminar flow downstream of the location where injection occurs for between about 0.1 second and about 3 seconds,

then discharging said stream into a larger water-containing region at a location below the liquid surface therewithin and lowering the fluid velocity and pressure in said larger region to remove nitrogen and the oxygen which the nitrogen strips from said water,

allowing said pressure in said larger region to gradually build up to a pressure of at least 3 atm. and periodically dropping it to about 2 atm.,

withdrawing the deoxygenated water from said larger region through throttling valve means and delivering it to a mixing zone, and

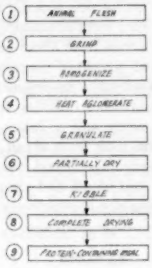
mixing flavoring with said deoxygenated liquid in said mixing zone to prepare a flavored beverage.

4,259,361

PROCESS FOR PREPARING A DEHYDRATED PROTEIN PRODUCT FROM ANIMAL MATTER

Donald Procter, 44 Merton St., Upper Hutt, New Zealand

Filed Dec. 19, 1978, Ser. No. 970,964
Claims priority, application New Zealand, Nov. 24, 1978,
Int. Cl.[3] A23J 1/10; A23K 1/00, 1/10
U.S. Cl. 426—285 8 Claims



1. A process for the manufacture of dehydrated foodstuffs, feedstuffs, or plant fertilizers comprising the steps of:

(a) subjecting raw or uncooked, or substantially raw or uncooked, protein-containing animal matter to ultra homogenization, prior to the application of heat, to yield an average particulate size of less than about three microns and to reduce any tendons, skin or connective tissues to blend with muscle tissues and to break down fibrous tissue and emulsify associated fats resulting in a smooth, creamy, liquid to semi-solid homogenate;

(b) heating the resulting homogenate to form a protein agglomerate to effect gelation of said protein;

(c) granulating the resulting agglomerate;

(d) partially drying the granulated agglomerate;

(e) kibbling the resultant partially dried and granulated agglomerate to break open case hardened protein film formed in step (d); and

(f) drying the resultant Kibbles.

4,259,362

PROCESS FOR IMPROVING BAKING PROPERTIES OF UNBLEACHED FLOUR

Max M. Hanamoto, Lafayette, and Maura M. Bean, Berkeley, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 768,917, Feb. 15, 1977, Pat. No. 4,157,406. This application Jan. 19, 1979, Ser. No. 4,785
Int. Cl.[3] A21D 6/00
U.S. Cl. 426—622 3 Claims

1. A process for preparing flour suitable for use in producing high-sugar-baked goods of good volume, texture, grain, and eating quality, from raw, non-dehydrated, unbleached hard wheat flour, which comprises—

(a) simultaneously heating the flour at a temperature of about 120°–140° C. and grinding the flour in a turbo-mill,

(b) air-classifying the so-heated and so-ground flour to separate the flour into a fraction containing 85–95% coarse particles and a fraction containing 5–15% fine particles,

(c) air-classifying the once-separated coarse particles to give a fraction containing 85–95% coarse particles and a fraction containing 5–15% fine particles, and

(d) air-classifying the twice-separated coarse particles to give a fraction containing 25–45% coarse particles and a fraction containing 55–75% fine particles with a protein content of about 5–9%, the latter being suitable for use in producing high sugar baked goods.

4,259,363

PREPARATION OF COMMINUTED MEAT PRODUCTS

Robert M. Lauck, New City, and Nicholas Melachouris, White Plains, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 836,164, Sep. 24, 1977, abandoned, which is a continuation-in-part of Ser. No. 751,821, Dec. 17, 1976, abandoned. This application Jan. 26, 1979, Ser. No. 6,817

Int. Cl.[3] A23L *1/31;* A23C *21/00*

U.S. Cl. 426—646 6 Claims

1. A process for preparing non-specific meat loaves which comprises admixing with a meat-containing composition suitable for preparing said loaves from about 1% to about 35% by weight based on the total weight of the non-specific meat loaf of a blend of deproteinized whey by-product selected from the group consisting of a permeate resulting from the ultrafiltration concentration of whey and a delactosed form of said permeate in combination with from about 5% to about 50% casein or its salts, the percentage of said casein or salts being by weight of the solids in said blend; and chopping the resultant admixture until the admixture is effectively emulsified.

4,259,364

METHOD FOR FLAVOR IMPROVEMENT OF SOY PROTEIN

Koo H. Chung, Granger, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Feb. 15, 1980, Ser. No. 121,667

Int. Cl.[3] A23J *3/00*

U.S. Cl. 426—656 9 Claims

1. A method of treating textured soy protein to thereby improve the flavor thereof which method comprises the steps of:

(a) treating the soy protein with an aqueous solution of a nontoxic bromate or iodate salt containing from about 15 to about 200 parts per million bromate or iodate ion, based on the weight of the soy protein containing 80% water after leaching, for a time and at a temperature sufficient to oxidize soy flavor precursors in the soy protein being treated; and

(b) removing the treated soy protein from contact with the salt solution.

4,259,365

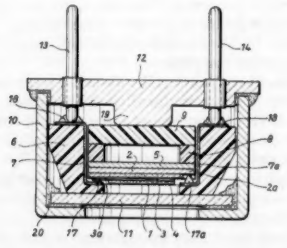
METHOD FOR CREATING A FERROELECTRIC OR PYROELECTRIC BODY

Wolfgang Ruppel, Stolper Strasse 6a; Ullrich Hetzler, Machstrasse 11; Horst Vogt, Roonstrasse 17, and Peter Wurfel, Schneidemuhler Str. 24b, all of Karlsruhe, Fed. Rep. of Germany

Filed Mar. 2, 1978, Ser. No. 882,796

Int. Cl.[3] B05D *3/02*

U.S. Cl. 427—46 30 Claims



1. A method for producing a solid ferroelectric or pyroelectric body comprising the steps of

depositing sodium nitrite in a liquid state onto a substrate to form a film having a thickness in the order of several microns; and

crystallizing the so-deposited sodium nitrite by cooling.

4,259,366

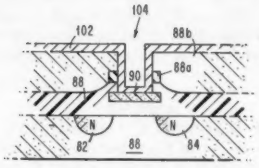
FABRICATION METHOD FOR FORMING FET GATE ELECTRODE

P. S. Balasubramanian, Boulder, Colo.; Claude L. Bertin, South Burlington, Vt., and Stephen B. Greenspan, Boca Raton, Fla., assignors to IBM Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 945,746, Sep. 25, 1978, abandoned, which is a division of Ser. No. 809,877, Jun. 24, 1977, Pat. No. 4,140,967. This application Jan. 17, 1980, Ser. No. 112,874

Int. Cl.[3] H01L *21/283*

U.S. Cl. 427—88 2 Claims



1. A method for forming an FET gate electrode connection between a first level polycrystalline silicon gate and a second level metal layer separated by an insulating layer, comprising the steps of:

forming a silicon nitride layer on top of said polycrystalline silicon gate, to serve as an etch stop;

forming said insulating layer on top of said silicon nitride layer;

etching a via hole through said insulating layer above said gate with a reactive plasma, which stops at the surface of said silicon nitride layer;

dip etching said silicon nitride layer exposed through said via hole, to expose said polycrystalline silicon gate;

depositing a layer of metal over said insulating layer and in said via hole to contact said polycrystalline silicon gate, as said second level of metal.

4,259,367

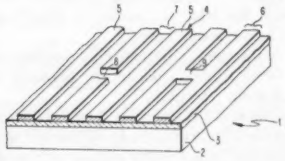
FINE LINE REPAIR TECHNIQUE

William E. Dougherty, Jr., Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,951

Int. Cl.[3] H01L *21/28*

U.S. Cl. 427—96 4 Claims



1. A method for repair of opens and shorts in planar semiconductor device metallurgy comprising:

(a) deleting portions of conductor lines on both sides of any shorted sections to form opens for electrically isolating said sections;

(b) coating said device over said metallurgy with a dielectric layer;

(c) forming vias in the dielectric to the terminal ends of the basic conductor lines adjacent all opens; and

(d) forming conductor patch lines on the dielectric layer over the opens in extension through said vias to the open-adjacent ends of the basic underlying conductor lines as part of said first level metallurgy.

4,259,368

MANUFACTURE OF ACICULAR MAGNETIC IRON OXIDE

Peter Rudolf, Neuhofen; Werner Steck, Mutterstadt; Wilhelm Sarnecki, Limburgerhof, and Christof Jaeckh, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 8, 1980, Ser. No. 138,307

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1979, 2916403

Int. Cl.[3] **C01G** *49/06, 49/08*

U.S. Cl. 427—130 **4 Claims**

1. A process for the manufacture of an acicular magnetic iron oxide which consists of a core of gamma-iron(III) oxide surrounded by a shell of a magnetite modified with zinc(II) ions and/or manganese(II) ions, in which is present, based on total modified gamma-iron(III) oxide, from 0.1 to 20 percent by weight of iron(II) ions and from 0.1 to 10 percent by weight of zinc(II) ions and/or from 0.1 to 10 percent by weight of manganese(II) ions, wherein acicular gamma-iron(III) oxide is suspended in water; iron(II) ions, and zinc(II) ions and/or manganese(II) ions are precipitated as hydroxides onto the acicular gamma-iron(III) oxide by means of an aqueous base under an inert gas atmosphere at from 8° to 100° C., the pH of the suspension after the precipitation being greater than 10 and all the solids are filtered off, washed neutral with water and heat-treated for from ½ to 10 hours in air at from 110° to 150° C. and/or in an inert gas atmosphere at from 100° to 280° C.

4,259,369

IMAGE HARDENING PROCESS

Benjamin J. Canavello, Stony Point, and Michael Hatzakis, Chappaqua, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1979, Ser. No. 103,252

Int. Cl.[3] **B44D** *1/46*

U.S. Cl. 427—155 **11 Claims**

1. A process for forming a flow resistant organic polymer resist mask on a substrate comprising the steps of;

evaporating a porous film of material selected from a metal or an insulator selected from the group consisting of Al, Al_2O_3, Cr, Ag, Si, SiO and SiO_2, onto the surface of said resist mask, heating the filmed resist mask to cause the hardening of said resist mask, and then removing the metal or insulator.

4,259,370

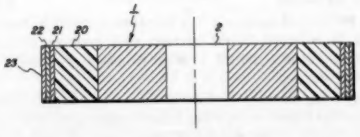
PROCESS FOR PROVIDING HIGH SPEED MULTI-FACETED INJECTION MOLDED POLYGONAL SCANNERS EMPLOYING AN ADHESION PROMOTING OVERCOATING FOR SUBSTANTIALLY APPLIED THIN FILM COATINGS

Tibor Fisli, 26018 Todd La., Los Altos Hills, Calif. 94022

Filed May 19, 1976, Ser. No. 687,962

Int. Cl.[3] **G02B** *5/08, 5/04;* **H04N** *3/08*

U.S. Cl. 427—162 **3 Claims**



1. A process for providing a high speed multi-faceted polygonal scanner comprising providing an injection molded acrylic polygon having a multiplicity of facet faces, applying an adhesive promoting magnesium fluoride overcoat to said facet faces, and then applying a reflective thin coating over said coated facet faces to provide a multi-faceted polygonal high speed scanner.

4,259,371

METHOD FOR IMPROVING THE ALKALI DURABILITY OF METAL OXIDE FILMS FORMED BY PYROLYSIS

Dennis S. Postupack, Natrona Heights, and John F. Sopko, Trafford, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 25, 1979, Ser. No. 60,318

Int. Cl.[3] **B05D** *3/02*

U.S. Cl. 427—226 **5 Claims**

1. In a method for depositing a metal oxide coating on glass by contacting a hot glass surface with a solution of a thermally decomposable metal compound at a temperature sufficient to pyrolyze the compound to form a metal oxide, the improvement which comprises cooling the solution to a temperature of about 50° to 65° F. (about 10° to 18° C.) prior to delivery to the hot glass.

4,259,372

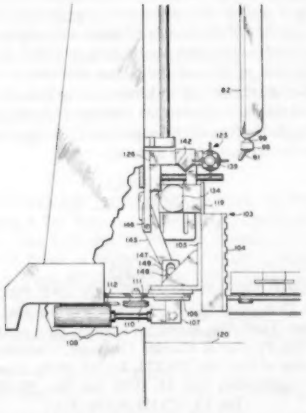
METHOD AND APPARATUS FOR APPLYING SEALANT TO A SEAM IN A CONTAINER

William R. Eddy, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 13, 1978, Ser. No. 924,328

Int. Cl.[3] **B05B** *13/06, 15/02;* **B05D** *7/22*

U.S. Cl. 427—236 **21 Claims**



10. An apparatus for applying sealant to a seam in a container formed by overlapping portions of the sidewall, said apparatus including:

conveying means operable for moving a container to and away from a first sealing station;

first detecting means positioned adjacent to a portion of said conveying means and being operable for detecting the rotational position of a container sidewall;

first drive means positioned adjacent said first detecting means and being operable for selectively rotating a container to a predetermined rotational position;

first sealant dispensing means positioned adjacent said conveying means at the first sealing station and being operable for dispensing sealant onto at least a portion of said seam, said first sealant dispensing means cooperating with means for providing relative movement between a portion of the

first sealant dispensing means and the container, said sealant dispensing means including a nozzle;

a support;

a carriage;

first means mounting the carriage on the support for reciprocal movement;

power means operably connected to the carriage for selectively effecting reciprocal movement of the carriage;

a hub;

second means rotatably mounting the hub on the carriage;

drive means operably connected to the second means operable for effecting rotation of the hub;

at least one wiper secured to said hub, said wiper being of a resilient material and projecting outwardly from the hub and being adapted for wiping material from a nozzle during rotation of the hub by having a surface of the wiper engage the nozzle; and

third means carried by the support and being operable for selectively engaging the surface of the wiper and removing from the surface of the wiper at least a portion of the material wiped from the nozzle.

19. A method of applying sealant to a seam in a container formed by overlapping portions of a sidewall, said method comprising:

moving a container to a first sealing station;

detecting the rotational position of the container sidewall of the thus moved container;

selectively rotating the container from the thus detected rotational position to a predetermined rotational position;

moving a sealant applying nozzle from a first position to a second position relative to the container at the thus predetermined position and dispensing sealant onto at least a portion of said seam;

moving the nozzle back to the first position;

moving a surface of a wiper into engagement with an exterior surface of the nozzle adjacent a discharge opening of the nozzle when said nozzle is in said first position;

moving the surface of the wiper relative to the exterior surface of the nozzle and transferring at least a portion of liquid on the nozzle to the surface of the wiper; and

moving the surface of the wiper out of engagement with the exterior surface of the nozzle.

4,259,373

FABRIC TREATING ARTICLES AND PROCESS

Emiel M. Demessemaekers, Montgomery, and Hans J. Pracht, Sycamore Township, Hamilton County, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 704,722, Jul. 12, 1976, abandoned. This application Apr. 12, 1979, Ser. No. 29,583

Int. Cl.[3] **C11D** *3/395, 7/54*

U.S. Cl. 427—242 **20 Claims**

13. A process for conditioning fabrics comprising the following steps:

(A) Adding to a clothes washer, containing fabrics and a normal amount of a detergent, a fabric conditioning article comprising:

(1) a closed, water-insoluble, heat resistant flexible receptacle, at least one wall of said receptacle comprising two layers having a combined air permeability of from about 200 to 390 cubic feet per minute per square foot of surface;

(2) an effective amount of a fabric softener/antistat composition, said composition being releasably enclosed within said receptacle; and

(B) operating said washer at normal operating conditions through the wash, rinse and spin dry cycles.

4,259,374

METHOD OF PAINTING

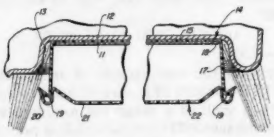
Raymond A. Bianchi, Pekin, and Sally L. Heathcoat, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 27, 1979, Ser. No. 85,648

This PCT application filed Apr. 27, 1979, Ser. No. 85,648 PCT No. PCT/US79/00282, § 371 Apr. 27, 1979, § 102(e) Date Apr. 27, 1979, PCT Pub No. WO 80/02390 PCT Pub. Date Nov. 13, 1980

Int. Cl.[3] **B05D** *1/32*

U.S. Cl. 427—282 **20 Claims**



1. The method of painting a wall surface (**13**) surrounding the panel (**11**) comprising the steps of:

providing a protector element (**14**) having a first portion (**15**) defining a periphery at least as large as the periphery of the panel and a second portion (**17**) projecting from said periphery of the first portion;

disposing the protector element with the first portion (**15**) rearwardly of said panel (**11**) and said second portion (**17**) projecting therefrom in surrounding relationship to the periphery (**18**) of said panel (**11**) to define a shield (**22**) for preventing paint being applied to the wall surface (**13**) from being deposited on said panel;

painting said wall surface (**13**) while permitting a portion of the paint to be deposited on said protector element (**14**) surrounding the panel (**11**); and

removing said second portion (**17**) of the protector element (**14**).

16. Structure for use in painting a wall surface (**13**) surrounding an element (**11**) to be left unpainted and mounted to said wall surface, said structure comprising:

a base member (**14**) having a base wall (**15**) adapted to be secured to said wall surface between said wall surface and said element and defining a peripheral edge portion (**24**) extending slightly from behind said element, and a spacer (**17**) extending forwardly from said peripheral edge portion and defining a forward connecting portion (**19**); and

a removable cover (**21**) carried by said connecting portion (**19**), said spacer and cover cooperatively defining a protective enclosure (**22**) about the element (**11**), said spacer being separable from said base wall along said peripheral edge portion (**24**) upon completion of painting of the surrounding wall surface (**13**).

4,259,375

DECORATIVE PROCESS

Eustathios Vassiliou, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 31, 1979, Ser. No. 44,075

Int. Cl.[3] **B05D** *5/06, 1/36*

U.S. Cl. 427—267 **5 Claims**

1. A process of applying to a substrate a smooth, heat-stable coating in aqueous liquid carrier, said coating including a decorative pattern, which process consists essentially of the sequential steps of

(a) applying directly to said substrate a primer coat including aqueous liquid carrier and a heat-stable polymer composition stable at temperatures above 300° C. and removing the liquid carrier from said primer coat,

(b) applying to said primer coated substrate a base coat composition including aqueous liquid carrier and a heat-

stable polymer composition stable at temperatures above 300° C.,

(c) while the base coat still contains the liquid carrier, applying to said base coat a decorative pattern of an intermediate coat composition including aqueous liquid carrier and a colorant which produces a darkness or color differing from that of the base coat,

(d) while the intermediate coat still contains the liquid carrier, applying to said intermediate coat a light-transmitting topcoat composition including aqueous liquid carrier and a heat-stable polymer composition stable at temperatures above 300° C., and

(e) heating the coated substrate to drive off the liquid carrier and cure the coats to form a smooth, heat-stable coating.

4,259,376

CATALYTIC PROMOTERS IN ELECTROLESS PLATING CATALYSTS APPLIED AS AN EMULSION

Nathan Feldstein, 63 Hemlock Cir., Princeton, N.J. 08540

Division of Ser. No. 833,905, Sep. 16, 1977, Pat. No. 4,151,311, which is a continuation-in-part of Ser. No. 651,507, Jan. 22, 1976. This application Mar. 21, 1979, Ser. No. 22,518

Int. Cl.³ C23C *3/02*

U.S. Cl. 427—304 **15 Claims**

1. A process for the electroless plating of a non-conductor surface comprising (1) contacting said surface with an emulsion comprising the admixture of a principal catalytic agent wherein said principal catalytic agent is a compound of a metal selected from the group of metals consisting of copper, nickel, cobalt and iron and mixtures thereof and a catalytic promoter agent wherein said catalytic agent is a compound of a metal selected from the group of metals consisting of Mg, Ca, Sr, Sc, Y, La, Ti, Zr, Hf, Nb, Ta, Cr, Mo, Wv, Mn, Tc and Re and mixtures thereof and further wherein the concentrations for the principal catalytic agent and the catalytic promoter agent are so adjusted as to yield enhanced catalytic activity for electroless plating initiation in comparison to the same emulsion in the absence of said catalytic promoter agent, and (2) contacting the treated non-conductor surface with an electroless (chemical) plating bath.

4,259,377

PROCESS OF MAKING PROTECTIVE GLOVES

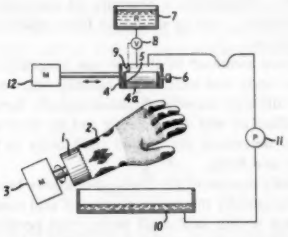
Rene Baize, Boulogne sur Seine, France, assignor to Sofiman, Societe Anonyme, Paris, France

Continuation-in-part of Ser. No. 865,590, Dec. 29, 1977, abandoned. This application Nov. 7, 1979, Ser. No. 91,987

Claims priority, application France, Jan. 4, 1977, 77 00040

Int. Cl.³ B05D *1/40*

U.S. Cl. 427—346 **5 Claims**



1. A process of manufacturing an article of clothing of non-circular cross section such as a protective glove having a supple internal lining of light weight, porous woven or knitted textile material and an external protective covering, which comprises providing a form having the shape of the desired article, fitting a supple lining of lightweight porous woven or knitted textile material on said form, placing said form with said lining thereon vertically beneath a fluid distributing means supplied with fluid coating material for forming said covering and provided with means for controlling the flow of said coating material from said distributing means, permitting said coating material to flow downwardly by gravity from said distributing means onto said lining on said form while controlling the flow of said coating material and rotating said form with said lining thereon about a generally horizontal axis while effecting relative movement between said distributing means and said form in a direction axial of said rotating form to distribute said coating material progressively over said lining on said form as said coating material flows by gravity from said distributing means as a compact stream having greater width than thickness, and thereby forms an impervious covering over said lining, said form being initially tilted during said rotation so that the fingers of the form and lining are inclined upwardly while said coating material is flowed onto a zone embracing the junction of the fingers with a body portion, and said form then being tilted during said rotation with the fingers inclined downwardly while said coating material is flowed successively onto other zones of said lining on said form until the entire lining is coated, and thereafter subjecting said covering to a thermal treatment to cure said coating material covering said lining.

4,259,378

WOOD TREATMENT PROCESS

Neil G. Richardson, Montreal, Canada, assignor to Domtar Inc., Montreal, Canada

Filed Dec. 11, 1979, Ser. No. 102,374

Int. Cl.³ B05D *3/00, 3/12, 1/18*

U.S. Cl. 427—352 **6 Claims**

2. A process for the treatment of wood material comprising pressure impregnating a charge of wood material with an aqueous ammoniacal solution containing a water insoluble treating chemical, separating said impregnated material from excess of said solution, at least partially drying said wood material thereby substantially eliminating pools of liquid from surface of said wood material and producing deposits of said treating chemical on said surface, forming an aqueous ammoniacal solution in situ on said surface, dissolving said deposits in said solution, maintaining said deposits dissolved in said solution until said surface is substantially free of said deposits.

4,259,379

APPLICATION OF LIQUID MATERIAL TO WEBS

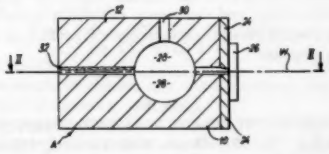
Arthur Britton, 4 The Sycamores, Bramhope, Leeds LS16 9JR, Yorkshire; John C. Smith, 10 Pine Rd., Didsbury, Manchester; Roger I. Davis, 8 Wildcroft Ave., Moston, Manchester, and John A. Page, 69 Kingsfield Dr., Manchester, all of England

Filed Nov. 3, 1978, Ser. No. 957,369

Claims priority, application United Kingdom, Nov. 10, 1977, 46782/77

Int. Cl.³ B05D *3/12*

U.S. Cl. 427—356 **22 Claims**



1. An applicator for applying liquid to a web comprising a pair of solid blocks juxtaposed together with one block above the other defining an entrance end and an exit end, at least the bottom surface of the top block defining a recess located nearer to the exit end of said juxtaposed blocks, said recess extending

transverse to the path of a web travelling through the applicator a distance at least equal to the width of the web being treated, a bore communicating the recess with a reservoir of coating liquid, first means for holding the pair of blocks spaced apart in the vertical direction and for defining an inlet passageway correlated with the width of the web to be coated, said inlet passageway extending from said recess to the entrance end of said juxtaposed blocks, exit means defining an exit from said recess to said exit end of said juxtaposed blocks, at least one doctor blade mounted on an end of said top block at said exit means to bear on a web exiting therefrom and having a width to extend transverse to said exit means, and side curtain means mounted against the end portions of the doctor blade to reduce the width of the doctor blade so that the coating operation can be conducted with the recess completely filled with coating liquid whereby precise thicknesses of coating can be applied to the surface of the web or impregnated thereinto in a substantially sealed enclosure.

4,259,380

METHOD FOR RIGIDIFYING TEXTILE PIECES BY COATING WITH PLASTIC

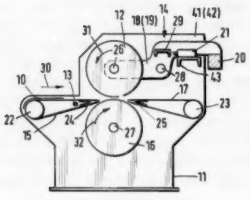
Richard Juraschek, Vlotho, Fed. Rep. of Germany, assignor to Herbert Kannegiesser GmbH & Co., Vlotho, Fed. Rep. of Germany

Filed May 3, 1979, Ser. No. 35,662

Claims priority, application Fed. Rep. of Germany, May 5, 1978, 2819547

Int. Cl.³ B05D *1/28*

U.S. Cl. 427—428 **2 Claims**



1. In a method of rigidifying outerwear pieces of textile material of different configurations for the production of clothing by coating them with plastic, wherein the textile pieces are serially fed in one behind the other on a transport conveyor, and the plastic is transferred onto the pieces by a compressing cylinder which bears against the textile pieces under pressure during the coating, the improvement characterized by:

(a) continuously sensing the width of each incoming textile piece in a direction transverse to the direction of delivery of the conveyor, and

(b) automatically and continuously controlling the force with which the compressing cylinder bears against said each textile piece in direct proportion to the sensed width, whereby the greater the sensed width the greater the cylinder force, and vice versa, to thereby achieve a uniform coating pressure on each piece regardless of its shape or orientation.

4,259,381

ORNAMENT FOR BURIAL MONUMENTS

Kinjo Narita, No. 292, Ooaza Wattokumachi, Hirosaki-shi, Aomori-ken, Japan

Filed Jun. 7, 1979, Ser. No. 46,506

Claims priority, application Japan, Jun. 8, 1978, 53-69215

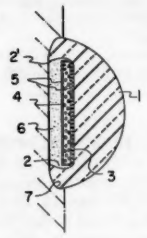
Int. Cl.³ E04H *13/00*

U.S. Cl. 428—13 **4 Claims**

1. An ornamental element adapted to be fixed to a monument which comprises:

a transparent body having a convex lense shape in the front side portion thereof;

a recess provided in the back side portion of said transparent body for receiving a desired document, said recess having a margin projecting inwardly such that the diameter of the marginal surface is smaller than the diameter of the inside portion of said recess;



a powder-desiccant material disposed within said recess adjacent to the document covered with a waterproof paper for protecting said document within the ornamental element from the environment; and

a sealer material filled within the recess adjacent to said waterproof paper of the desiccant for further sealing and protecting the document from the environment.

4,259,382

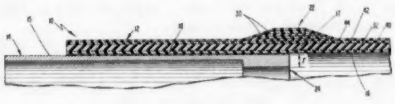
FIBER REINFORCED COMPOSITE SHAFT WITH METAL CONNECTOR SLEEVES SECURED BY ADHESIVE

Frank J. Schwan, Fremont, Calif., assignor to Celanese Corporation, New York, N.Y.

Filed May 29, 1979, Ser. No. 43,555

Int. Cl.³ B32B *5/12*; F16C *1/02*

U.S. Cl. 428—36 **9 Claims**



1. A hollow tubular fiber reinforced composite shaft comprising:

a shaft body comprising a plurality of integrally bonded circumferential plies of solidified fiber reinforced resinuous material,

a metal sleeve mounted in at least one longitudinal end of said shaft body and including a radially outer surface,

a layer of adhesive material disposed radially between said outer surface of said metal sleeve and an inner surface of a radially innermost ply of said shaft body to bond said sleeve to said body,

said radially innermost ply and said adhesive layer overlying substantially the entire portion of said outer surface disposed within said shaft body, said portion of said outer surface being of substantially constant radius along its longitudinal extent,

a portion of said body located adjacent an inner longitudinal end of said adhesive layer and in overlying relation to said constant radius portion of said outer surface as viewed in a radially inward direction being of enlarged radial thickness relative to the remainder of said body disposed longitudinally outwardly of said enlarged thickness portion.

4,259,383
DISINFECTING TISSUE

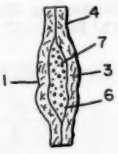
Heinz Eggensperger, Hamburg; Dieter Rehn, Norderstedt; Wolfgang Beilfuss, Hamburg-Hummelsbüttel, and Helmut Nolte, Tangstedt, all of Fed. Rep. of Germany, assignors to Sterling Drug Inc., New York, N.Y.

Filed Jun. 26, 1979, Ser. No. 52,264

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1978, 2828724

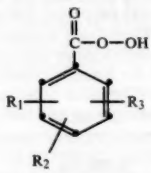
Int. Cl.[3] B32B *3/02, 3/12*

U.S. Cl. 428—72 5 Claims



1. A disinfecting tissue comprising an absorbent material having incorporated therein a disinfecting agent where the disinfecting agent is selected from the group consisting of:

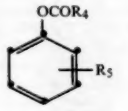
(a) an organic percarboxylic acid of the formula



I

where R_1, R_2 and R_3 independently are hydrogen, chlorine, bromine, fluorine, nitro, cyano, trifluoromethyl, carboxy, methoxycarbonyl, aminocarbonyl, straight or branched alkyl having from 1 to 5 carbon atoms, phenyl, methoxy, ethoxy, acetyloxy, acetyl or hydroxysulfonyl, provided that at least one of R_1, R_2 and R_3 is not hydrogen, or R_2 and R_3, when attached to adjacent ring carbon atoms, form together with the adjacent ring carbon atoms an aromatic ring;

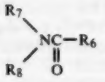
(b) a mixture comprising an agent capable of generating hydrogen peroxide in water; and a compound selected from the group consisting of an organic carboxylic acid anhydride, and an acyloxy acid of the formula



II

where R_4 is lower-alkyl which is unsubstituted or substituted by a substituent selected from the group consisting of hydroxy, lower-alkoxy, lower-alkanoyloxy, carboxy and halo; or R_4 is phenyl which is unsubstituted or substituted by a substituent selected from the group consisting of lower-alkyl, lower-alkoxy, hydroxy and halo; and R_5 is carboxy or hydroxysulfonyl, and water-soluble salts of the acyloxy-acid; and

(c) a carboxylic acid amide of the formula



III

where R_6, R_7 and R_8 independently are hydrogen, lower-alkyl, cycloalkyl, aryl or aryl-lower-alkyl, or R_6 and R_7 together with the carbonyl and nitrogen respectively to which they are attached form a lactam having from 4 to 8 ring atoms; and mixtures of two or all three of (a), (b) and (c); wherein the tissue is comprised of two layers of the absorbent material which are joined to form a multiplicity of pockets, the disinfecting agent being disposed in the pockets.

4,259,384
IMITATION-LEATHER MATERIAL AND METHOD OF PREPARING SUCH MATERIAL

Manuel J. Veiga, Lowell, and Richard E. Petersen, Concord, both of Mass., assignors to Compo Industries, Inc., Waltham, Mass., a part interest

Continuation-in-part of Ser. No. 907,974, May 22, 1978. This application Sep. 17, 1979, Ser. No. 75,901

The portion of the term of this patent subsequent to Sep. 23, 1997, has been disclaimed.

Int. Cl.[3] B32B *5/18, 3/00*

U.S. Cl. 428—97 21 Claims

1. In a method of preparing an imitation-leather sheet material, which method comprises:

(a) coating a thin wet foam layer of a foam latex composition onto a sheet material, the latex composition comprising a foamable, film-forming, elastomeric, cross-linkable polymer and a cross-linking agent for the polymer;

(b) placing a fibrous base sheet material onto the top surface of the wet foam latex layer to provide a wet laminate product; and

(c) heating the wet laminate product to dry and cure the foam layer and to provide a dry laminate product, the improvement which comprises

(i) providing a heat-coagulable, polymeric, acidic, latex foam composition as the wet foam layer, wherein the latex composition includes an acid or an acid salt to reduce the pH to less than 5.0, and

(ii) shock-heating the wet foam layer of the wet laminate product by heating rapidly the wet foam layer in a single heating operation to a temperature of not greater than 450° F. and greater than about 250° F., to heat-coagulate the polymer to a fine, dense, open-cell, foam structure to remove water from the coagulated foam layer and to cross-link the polymer.

4,259,385
EXPANDED REINFORCING SHEET MATERIAL, ITS METHOD OF MANUFACTURE, AND SHEET MATERIAL REINFORCED THEREWITH

Robert N. Keller, Utica, Mich., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Feb. 9, 1979, Ser. No. 10,791

Int. Cl.[3] B32B *3/10*

U.S. Cl. 428—135 21 Claims

1. As an article of manufacture, a composite expanded reinforcing sheet comprising,

an expanded structural sheet including a plurality of elongated strands interconnected at their ends by a plurality of integrally formed joints to define a pattern of generally diamond-shaped openings, said strands and joints being formed from a smooth flat sheet of structural material and each having generally flat face surfaces disposed at an acute angle to the plane of the expanded structural sheet, and

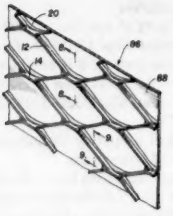
a layer of foamable adhesive material covering and being

firmly bonded to at least one flat face surface of the said strands and joints, the flat face surfaces of said strands and joints originally collectively defining the face surfaces of the flat sheet of structural material from which the expanded sheet was formed,

said foamable adhesive being capable of being activated to expand and bond the composite reinforcing material to a surface of another structure.

8. The reinforcing sheet as defined in claim **1** further comprising a second expanded structural sheet consisting of a plurality of elongated strands interconnected at their ends by a plurality of integrally formed joints to define a pattern of generally diamond-shaped openings, said strands and joints of said second sheet being formed from a smooth flat sheet of structural material and each having generally flat face surfaces disposed at an acute angle to the plane of the second expanded structural sheet, and

the two said expanded structural sheets being disposed in overlying, interfitting relation with one another with the strands and joints, respectively, of the two said expanded



structural sheets being disposed in opposed, spaced, generally parallel relation to one another,

said layer of foamable adhesive material being disposed between and firmly bonded to the opposed surfaces of said strands and joints of the two said expanded structural sheets.

14. A structural panel comprising,

a substantially flat structural sheet,

an expanded reinforcing sheet including a plurality of elongated strands interconnected by a plurality of integrally formed joints, said strands and joints cooperating to define a pattern of generally diamond-shaped openings and each having a generally flat face surface disposed at an acute angle to the plane of the reinforcing sheet, and

a layer of resilient, formed adhesive bonded to said generally flat face surface of said strands and joints and to said structural sheet to firmly join the structural sheet and the expanded reinforcing sheet to define said structural panel, said adhesive joining said strands and joints to said structural sheet along substantially their full lengths.

4,259,386

FLEXIBLE WALLCOVERINGS

Eric C. Wagstaffe, Wilmslow, England, assignor to Reed International Limited, London, England

Filed Apr. 29, 1980, Ser. No. 144,827

Int. Cl.[3] **B32B** *5/18*

U.S. Cl. 428—159 **8 Claims**

1. A flexible wallcovering comprising a woodchip paper substrate having a coating of a foamed polymeric composition thereon.

2. A wallcovering as claimed in claim **1** in which the substrate has 20–35% by weight of woodchips some of which provide a relief on at least one surface thereof and the foamed polymeric composition is on said surface and has both a blistered and textured appearance.

4,259,387

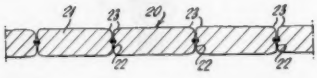
ABSORBENT FIBROUS STRUCTURE

Frederick K. Mesek, Tinley Park, Ill., assignor to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Continuation-in-part of Ser. No. 898,199, Apr. 20, 1978, abandoned. This application Aug. 20, 1979, Ser. No. 68,046

Int. Cl.[3] **B32B** *3/30, 23/02*

U.S. Cl. 428—167 **9 Claims**



1. An absorbent fibrous structure having good stability and enhanced absorbency, flexibility and feel comprising a highly porous loosely compacted cellulosic fibrous batt having opposed major surfaces, and a plurality of spaced, narrow, dense, compacted cellulosic fibrous lines integral with said batt and formed by compacting the entire thickness of said batt, said narrow dense lines having good strength and excellent resistance to delamination, said lines being sufficiently narrow that the areas of the batt adjacent said narrow dense lines extend over and obscure said narrow dense lines with fibrous regions of lesser density than the average density of said batt, the surfaces of said absorbent structure being recessed inwardly at said regions of lesser density than said batt.

4,259,388

MEDALLION-LIKE ARTICLES, LAMP LENSES AND METHOD FOR THEIR MANUFACTURE

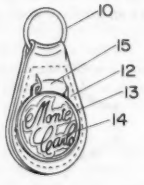
Robert W. Reed, Heath, Ohio, assignor to The D. L. Auld Company, Dayton, Ohio

Division of Ser. No. 827,433, Aug. 23, 1977, Pat. No. 4,139,654, which is a continuation of Ser. No. 599,862, Jul. 28, 1975, abandoned. This application Nov. 6, 1978, Ser. No. 958,206

The portion of the term of this patent subsequent to Feb. 13, 1996, has been disclaimed.

Int. Cl.[3] **B05D** *3/06, 5/06;* **B29D** *11/00*

U.S. Cl. 428—174 **4 Claims**



1. A medallion-like article of manufacture comprising a lens cap bonded to an indicia-bearing substrate by the steps of:

(a) supporting an indicia-bearing substrate wettable by an uncured, liquid, radiation-curable polymer in a generally horizontal orientation with its indicia facing upwardly;

(b) depositing an uncured, liquid polymer, which is curable by radiation other than radiant heat, only on the upwardly facing indicia-bearing face of said substrate in sufficient quantity to flow to the effective edges of said substrate

and form a convex upper surface by means of the surface tension of said polymer, and

(c) irradiating said polymer with radiation other than radiant heat to effect the cure of said polymer.

4,259,389

HIGH PRESSURE-LOW POROSITY WET SEAL

Raymond W. Vine, Avon, and Stephen T. Narsavage, Bolton, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 859,884, Dec. 12, 1977, abandoned.
This application Dec. 22, 1978, Ser. No. 972,600
Int. Cl.[3] B32B 1/04; H01M 2/08
U.S. Cl. 428—192 4 Claims

1. A porous electrode substrate for a fuel cell having a seal portion along at least one edge thereof where the substrate is clamped by the sealing surfaces of the distributor plates of the cell, the seal being in a band along the edge of the electrode to prevent leakage of gas from the cell, the band being substantially the width of the sealing surfaces of the plates and in a position to be clamped thereby, the seal consisting of an inert powder selected from the group consisting of silicon carbide, carbon or graphite, this powder having a variable particle size from 10 to 0.1 microns and being mixed with about 2% of polytetrafluoroethylene as a binder, this sealing material being in a band on the substrate of such thickness and width as to be clamped by the distributor plates and prevent gas leakage past said seal during fuel cell operation.

4,259,390

NONWOVEN FABRIC HAVING THE APPEARANCE OF A WOVEN FABRIC

Erich Fahrbach; Adolf Gräber; Jürgen Knoke, all of Weinheim an der Bergstrasse; Helmer Schweizer, Hirschberg, and Bohuslav Tecl, Weinheim an der Bergstrasse, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Oct. 16, 1978, Ser. No. 951,945
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1977, 2752935
Int. Cl.[3] B32B 27/14
U.S. Cl. 428—195 11 Claims

1. A nonwoven fabric having the appearance of a woven fabric, and suited for use as a lining material for garments, comprising a nonwoven fabric substrate embossed substantially over its entire face in a regular pattern of discrete areas of a maximum diameter of about 0.45 mm spaced not more than about 1.0 mm apart and carrying thereon substantially over its entire face in a regular printed pattern discrete colored areas of bonding agent of a maximum diameter of about 0.45 mm spaced not more than about 0.7 mm apart, the areas of the embossed pattern being spaced farther apart then the colored areas.

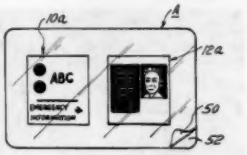
4,259,391

INDICIA BEARING PLASTIC LAMINATE AND METHOD OF PRODUCING SAME

Frederick R. Brecht, 3241 Duncan Ave., Sarasota, Fla. 33579

Filed Oct. 30, 1978, Ser. No. 955,790
Int. Cl.[3] B32B 3/00; B41M 3/14
U.S. Cl. 428—195 3 Claims

1. A wallet-size identification card made of a partially transparent indicia bearing plastic laminate, said identification card comprising at least a pair of transparent thermoplastic layers edge-bonded to one another by heat sealing and at least one photographic transparency disposed between said thermoplastic layers within the bonded edge thereof, said photographic transparency bearing first indicia normally readable by the naked eye and second indicia not readable by the naked eye, said photographic transparency being a photographic reproduction of an original information member bearing said first indicia in a size substantially larger than the size of said second indicia, said photographic reproduction transparency reduced to an appropriate size such as to render said second indicia not



readable by the naked eye while permitting said first indicia to remain readable by the naked eye wherein said photographic transparency is a microfilm having at least two portions, one of said portions bearing data information in the form of said first indicia normally readable by the naked eye and indicating membership in a particular group of individuals and the other of said portions bearing data information pertaining to a specific individual in said group in the form of said second indicia not readable by the naked eye.

4,259,392

MULTILAYER MAGNETIC RECORDING MEDIUM

Masaaki Suzuki, Odawara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 16, 1978, Ser. No. 916,430
Claims priority, application Japan, Jun. 16, 1977, 52/70508
Int. Cl.[2] H01F 10/02
U.S. Cl. 428—212 12 Claims

1. A multilayer magnetic recording medium comprising a non-magnetic support having thereon two magnetic recording layers, each comprising fine ferromagnetic particles dispersed in a binder, said fine ferromagnetic particles of the uppermost magnetic recording layer being a mixture of 2 or more kinds of fine ferromagnetic particles having two or more peaks in the coercive force distribution and said ferromagnetic alloy particles, wherein when the peak values in the coercive force distribution of the fine ferromagnetic particles in the outermost magnetic recording layer are Hc_2, Hc_3, Hc_4, . . . Hc_n, the mixing ratio by weight of the fine ferromagnetic particles is (0.4/n) to (1.6/n), said fine ferromagnetic particles of the innermost magnetic recording layer being fine ferromagnetic iron oxide particles having peaks in the coercive force distribution lower than the minimum value of the peaks of the ferromagnetic particles of the outermost magnetic recording layer, and wherein the peak values in the coercive force distribution of the fine ferromagnetic particles in the outermost magnetic recording layer are Hc_2, Hc_3, . . . Hc_n and when the peak value is Hc_1 in the coercive force distribution of the fine ferromagnetic particles in the innermost magnetic recording layer, these peak values are in the relationship

$$Hc_1 < Hc_2 < Hc_3 < \ldots < Hc_n,$$

the thickness of the outermost magnetic recording layer being

not greater than the thickness of the inner magnetic recording layer.

4,259,393

FIBRILLATED POLYESTER TEXTILE FABRIC

Francis W. Marco, Pauline, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Oct. 2, 1978, Ser. No. 947,368
Int. Cl.³ B32B *27/02*
U.S. Cl. 428—224 **12 Claims**

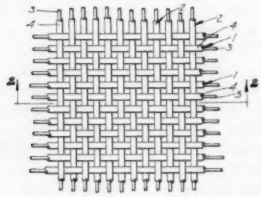
1. A textile fabric comprised of a plurality of yarns, each said yarn comprising a multiplicity of texturized polyester filaments characterized in that on an average at least about 5 of said texturized polyester filaments per square centimeter of fabric are broken and the ends of said broken filaments have a plurality of fibrils projecting from them, the thickness of each said fibril being no more than half of the thickness of the filament they project from and the length of each said fibril being over 4 times the thickness of the filament.

4,259,394

PAPERMAKING FABRICS WITH ENHANCED DIMENSIONAL STABILITY

Abdul Q. Khan, East Greenbush, N.Y., assignor to Huyck Corporation, Wake Forest, N.C.

Filed Sep. 26, 1979, Ser. No. 79,222
Int. Cl.³ B32B *5/02*
U.S. Cl. 428—229 **10 Claims**



1. A papermaking fabric comprising a base of interwoven machine direction and cross-machine direction core wrapped yarns composed of core forming yarns which are effectively heat infusible and wrap forming yarns which are effectively heat fusible, a fibrous batt needled to one side of said interwoven base, the wrap forming yarns of said interwoven base being heat fused to each other at their points of contact on the side of said interwoven base opposite said fibrous batt.

4,259,395

PROCESS FOR PREPARATION OF RESIN COMPOSITION USEFUL FOR LAMINATED SHEET

Seimei Yasui, Takarazuka; Yoshinobu Matsuda, Osaka; Masakazu Sagou, Osaka, and Takanobu Noguchi, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 12, 1979, Ser. No. 47,700
Claims priority, application Japan, Jun. 14, 1978, 53-72438; Jun. 29, 1978, 53-79384; Jan. 22, 1979, 54-6423
Int. Cl.³ C08G *8/04*
U.S. Cl. 428—248 **20 Claims**

1. A process for the preparation of a resin composition, which comprises reacting 100 parts by weight of a polybutadiene having a number average molecular weight of 150 to 10,000 and 1,4-structure of at least 80% by weight with 10 to 1,000 parts by weight of a phenol in the presence of 0.01 to 10 parts by weight of an acid catalyst at a temperature of 40° to 170° C. to obtain a composition of a polybutadiene-phenol adduct wherein one molecule of phenol per 3 to 8 butadiene units is added to the polybutadiene, and reacting the polybutadiene-phenol adduct composition with a formaldehyde in the amount of 0.6 to 3.0 moles per 1 mole of the phenol used for the preparation of the polybutadiene-phenol adduct composition in the presence of a basic catalyst.

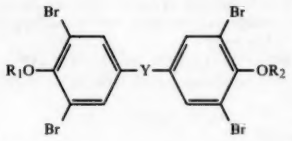
4,259,396

FLAME RETARDANT TREATMENT FOR POLYESTER PRODUCTS

Mikio Tomita, Shiga, and Athumi Ueno, Kyoto, both of Japan, assignors to Meisei Chemical Works, Ltd., Kyoto, Japan

Filed May 16, 1978, Ser. No. 906,382
Claims priority, application Japan, May 17, 1977, 52-57331; Jun. 15, 1977, 52-71845; Jun. 15, 1977, 52-71846
Int. Cl.³ B32B *27/08, 27/36, 27/06*
U.S. Cl. 428—265 **6 Claims**

1. A flame retardant treatment for polyester product, which comprises treating said polyester product with a treatment liquid containing at least one of dibromophenyl derivatives represented by the following general formula:



wherein Y is $—SO_2—$ or $—C(CH_3)_2—$, each of R_1 and R_2 is —H, $—CH_3$, $—C_2H_5$, $—C_3H_7OH$, $—CH_2CH_2Br$ or $—(CH_2CH_2O)_nH$ and n is a positive integer of from 1 to 9 and wherein said polyester product is further treated with an oligomer of vinyl phosphonate.

4,259,397

BRAKE LINING MATERIAL

Kazuhisa Saito, Mishima; Fumio Miyatake, Shizuoka, and Kunio Shibata, Tokyo, all of Japan, assignors to Toho Beslon Co., Ltd. and Nisshin Spinning Co., Ltd., both of Tokyo, Japan

Filed Jul. 9, 1979, Ser. No. 55,668
Claims priority, application Japan, Jul. 7, 1978, 53-82704; Jul. 7, 1978, 53-82705
Int. Cl.³ D04H *1/58*
U.S. Cl. 428—288 **9 Claims**

1. A brake lining comprising a binder and a fiber constituent comprising a preoxidized fiber derived from acrylic fibers and containing at least about 5 wt% of bonded oxygen in combination with carbon fiber, said brake lining exhibiting an excellent coefficient of friction and wear at high temperature.

4,259,398
ELECTRICAL INSULATING MATERIAL

Shunji Seino; Ryota Nishiyama, and Masaoki Nozaki, all of Tokyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

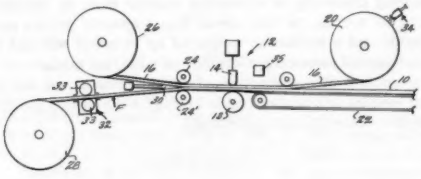
Filed Jul. 23, 1979, Ser. No. 60,632
Int. Cl.[3] B32B 5/16
U.S. Cl. 428—283 **8 Claims**

1. A process for producing an electrical insulating material comprising superposing a dried sheet of a mixture of at least 91 parts by weight of tiny mica flakes and at most 9 parts by weight of pulp-like particles of a heat resistant polymer selected from the group consisting of an aromatic polyamide and an aromatic polyamide-imide on at least one side of a dried sheet of a heat resistant base material containing the heat resistant polymer, which has sufficient structural strength and bonding them by heating at a temperature of 150° to 330° C. under a linear pressure of 50 to 300 kg/cm.

4,259,399
ULTRASONIC NONWOVEN BONDING

Berlie R. Hill, Cana, Va., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Aug. 31, 1978, Ser. No. 938,647
Int. Cl.[3] D04H 1/58
U.S. Cl. 428—288 **8 Claims**



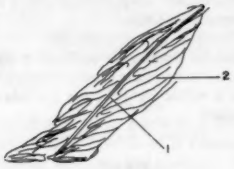
1. A nonwoven fabric having a weight of about 3 oz./yd.[2] or less preformed from a batt of random, loose ultrasonically fusible fibers, the batt having a weight of about 3 oz./yd.[2] or less, and produced by utilizing an ultrasonic welding machine having a patterned roll anvil or the like and a horn, and a carrier of flexible sheet material, said carrier being capable of drawing and spreading out ultrasonic energy from the machine; and by following the steps of disposing the batt and the carrier in face-to-face abutting relationship; progressively feeding the batt and carrier together between the horn and the anvil of the machine; supplying ultrasonic energy to the batt with the machine sufficient to form the batt into nonwoven fabric; and separating the batt and carrier after passage through the horn and anvil.

4,259,400
FIBROUS PADDING MATERIAL AND PROCESS FOR ITS MANUFACTURE

Robert Bolliand, Lyons, France, assignor to Rhone-Poulenc-Textile, Lyons, France

This PCT application filed Feb. 8, 1979, Ser. No. 21,607
PCT No. PCT/FR78/00001, § 371 Date Feb. 8, 1979, § 102(e) Date Feb. 8, 1979, PCT Pub. No. WO 78/00012, PCT Pub. Date Dec. 21, 1978
Int. Cl.[3] B32B 5/26, 5/28
U.S. Cl. 428—288 **2 Claims**

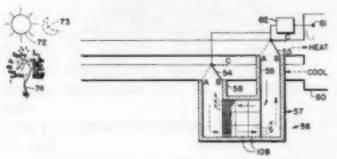
1. A new feather-like padding material for quilted articles, based on fibrous material, in the form of an element of defined length and of low thickness relative to its width, which element comprises a central filiform core, which is relatively dense and rigid compared to the whole of the material and to which are bonded fibres which are oriented substantially transversely relative to this core, the said fibres having fewer than 5 waves per centimeter and being entangled with one another so as to form a homogeneous thin web and being located on either side of the core, substantially in one and the same plane, the said core being formed of an ordinary thread combined with a heat-weldable thread.



4,259,401
METHODS, APPARATUS, AND COMPOSITIONS FOR STORING HEAT FOR THE HEATING AND COOLING OF BUILDINGS

Day Chahroudi, Tiburon, and Sean R. Wellesley-Miller, San Francisco, both of Calif., assignors to The Southwall Corporation, Palo Alto, Calif.

Continuation of Ser. No. 713,314, Aug. 10, 1976, abandoned. This application Nov. 20, 1978, Ser. No. 962,366
Int. Cl.[2] F24J 3/02; F25B 13/00; F28D 1/06
U.S. Cl. 428—306 **19 Claims**



1. A building element adapted to inhibit the change of the interior temperature of a building beyond prescribed temperature limits approximating room temperature, said element comprising:

a rigid porous matrix structure in thermal communication with the building interior;

a store of phase change material impregnating said matrix structure and having a melting point within said temperature limits so that said material melts when the interior temperature of the building exceeds the temperature limits to absorb heat and reduce the interior temperature until the store of material is entirely melted, and conversely said material freezes when the interior temperature of the building falls below the temperature limits to release heat and increase the interior temperature until the store of material is entirely frozen; and

means for sealing the store of material within the matrix structure so that the material undergoes repeated changes in phase between liquid and solid to maintain the interior temperature of the building within the prescribed limits.

15. A method for constructing a building material adapted to maintain the temperature within the building between selected

temperature limits approximating room temperature, said method comprising the steps of:

admixing cement, sand, sealing material, water, and a phase change material having a melting point within the selected temperature limits, which phase change material undergoes reversible freeze-thaw cyclical changes when subjected to appropriate temperatures above or below said selected temperature limits;

pouring the admixture into a mold; and

causing the molded admixture to form a rigid structural material in which the phase change material is suspended and sealed in a matrix formed from the other components of the admixture.

4,259,402

BONDING WITH FOAMED HOT MELT ADHESIVES

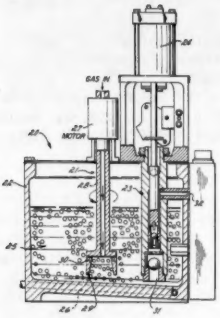
Walter H. Cobbs, Jr., Amherst, Ohio, and Robert G. Shong, Houston, Tex., assignors to Nordson Corporation, Amherst, Ohio

Continuation-in-part of Ser. No. 791,338, Apr. 27, 1977, Pat. No. 4,156,754, and Ser. No. 924,990, Jul. 17, 1978. This application Jan. 25, 1979, Ser. No. 6,464

The portion of the term of this patent subsequent to May 29, 1996, has been disclaimed.

Int. Cl.³ B32B *5/18*

U.S. Cl. 428—310 **35 Claims**



1. The method of bonding with a foamed thermoplastic adhesive which comprises

first stabilizing a dispersion of gas bubbles in a molten thermoplastic by incorporating in the molten thermoplastic a surfactant in a sufficient gas-stabilizing amount,

subsequently pressurizing said dispersion to form a hot solution of the gas in the molten thermoplastic,

dispensing said hot solution under lower pressure whereby said gas is released from said solution to form a hot foamed material, and

compressing the hot foam between two substrates to force the gas from the foam and to form a bond between the substrates.

4,259,403

CURED FIBERS COATED WITH ADHESION PROMOTING ADDITIVES FOR ETHYLENE-PROPYLENE-NONCONJUGATED DIENE ELASTOMERS

Richard W. Tomlinson, Watertown, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Jan. 16, 1979, Ser. No. 3,834

Int. Cl.³ D02G *3/48;* B32B *27/04*

U.S. Cl. 428—378 **18 Claims**

1. A composition comprising an ethylene-propylene-nonconjugated diene elastomer, 0.5 to 5.0 parts per hundred by weight of sulfur, based on the weight of said elastomer, 0.1 to 3.5 parts per hundred by weight, based on the weight of said elastomer of an accelerator, and 1.0 to 5.0 parts per hundred by weight of an additive selected from an acid of the formula $A(—COOH)_x$ or an anhydride thereof, wherein x is an integer of 1 or 2 and wherein if X is 2 the acid groups are vicinal and A is phenyl, C_2–C_{10} alkylene, C_2–C_{10} alkenylene, C_6–C_{10} bridged or non bridged cycloalkylene, or cycloalkenylene, and if X is 1, A is C_1–C_6 alkyl, said composition also comprising 0.1 to 1.0 parts per hundred by weight, based on the weight of said elastomer, of cobalt or copper in the form of a cobalt or copper salt selected from the group consisting of copper naphthenate, cobalt naphthenate and cobalt sulfate.

11. A cured composite comprising a first layer of a plurality of fibers which are coated with the dried residue of a resorcinol-formaldehyde-latex dip adhered to a second layer comprising a composition as claimed in claim 1.

4,259,404

COMPOSITE OF POLYAMIDE BONDED TO RUBBER AND METHOD FOR MAKING THE SAME

Gerard E. van Gils, Bogor, Indonesia, assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 540,197, Jan. 10, 1975, abandoned, which is a division of Ser. No. 316,206, Dec. 18, 1972, Pat. No. 3,872,937. This application Aug. 15, 1977, Ser. No. 824,465

Int. Cl.³ B32B *27/34*

U.S. Cl. 428—395 **8 Claims**

1. A polyamide reinforcing element useful in reinforcing rubber, said element containing a total of from about 3 to 7% by weight (dry) based on the weight of said element of an adhesive composition consisting essentially of a first deposit consisting essentially of a heat set epoxide from an epoxide having an average of from about 2 to 4 epoxide groups per molecule and a molecular weight of up to about 600 and a second deposit consisting essentially of a heat set mixture of a major amount of a rubbery vinyl pyridine copolymer and a minor amount of a heat reactable 2,6-bis(2,4-dihydroxy phenyl methyl)-4-chlorophenol composition.

4,259,405

SYNTHETIC FIBERS LUBRICATED WITH HETERIC COPOLYMER OF TETRAHYDROFURAN AND C_3 TO C_4 ALKYLENE OXIDE

David D. Newkirk, Beaverton, Oreg., and Basil Thir, Grosse Ile, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 15, 1980, Ser. No. 112,379

Int. Cl.³ B32B *27/34, 27/36;* B05D *3/02*

U.S. Cl. 428—395 **18 Claims**

1. A lubricated synthetic textile yarn comprising a polyester, polyamide, or polyacrylic fiber or mixtures thereof and present on the surface thereof, a lubricating amount of an oxyalkylene compound of the formula:

$$Y[A]_x$$

wherein Y is the residue formed by the removal of x atoms of active hydrogen from an organic compound initiator having a total of not more than 20 carbon atoms and free of elements other than carbon, hydrogen, and oxygen; A is a heteric mixture of at least one C_3 to C_4 alkylene oxide and tetrahydrofuran residues derived from the reaction of (1) tetrahydrofuran and (2) at least one of propylene oxide or butylene oxide in the respective ratio by weight of (1) to (2) of 1:99 to 99:1; and x is an integer of 2 to about 6; and wherein the total molecular weight of said compound is about 500 to about 10,000.

4,259,406

METHOD FOR PRODUCING SELECTIVELY TINTED PHOTOCHROMIC GLASS LENS AND PRODUCTS

Nicholas F. Borrelli, Elmira, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,434
Int. Cl.³ C03C *23/00*
U.S. Cl. 428—410 **6 Claims**

1. A method for making a selectively tinted photochromic glass lens which comprises the steps of:
(a) heating a silver halide-containing photochromic glass lens under reducing conditions to provide a colored surface layer on at least a portion of said lens; and
(b) chemically removing at least a portion of said colored surface layer to modify the color of said layer.

6. A selectively tinted photochromic glass lens provided according to the method of claim 1.

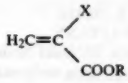
4,259,407

RADIATION-SENSITIVE POSITIVE RESIST

Tsukasa Tada, Yokohama; Yuzo Shimazaki, Tokyo; Masanobu Kohda, Kawasaki; Hirohisa Kato, Yokohama, and Hideo Saeki, Kawasaki, all of Japan, assignors to VLSI Technology Research Association, Japan

Filed Jul. 25, 1979, Ser. No. 60,593
Claims priority, application Japan, Jul. 27, 1978, 53-91769
Int. Cl.³ B32B *27/16, 27/30;* C08F *14/18*
U.S. Cl. 428—421 **5 Claims**

1. A semiconductor substrate or a mask substrate having coated thereon a coating of a radiation-sensitive positive resist polymer or copolymer, said polymer or copolymer being prepared from at least 50 mol % of one or more halogenated alkyl α-halogenated acrylate monomers expressed by the general structural formula:



(I)

where:
X=fluorine, chlorine or bromine,
R=alkyl group, aryl group or alkoxy alkyl group which have 1 to 10 carbon atoms and in which one or more hydrogen atoms are substituted by the corresponding number of fluorine atoms;
and wherein halogen atoms are contained in a number accounting for 32 percent or less of the total number of elements constituting said polymer or copolymer;
said coating having been formed by a process comprising:
(a) forming a resist layer from said polymer or copolymer on a semiconductor substrate or mask substrate;
(b) prebaking said resist layer at an elevated temperature;
(c) irradiating selected portions of said prebaked layer for patterning; and
(d) removing said selected portions of said resist layer.

4,259,408

METHOD FOR THE FLAME BONDING OF A MOLDED COMPONENT OF SOFT POLYVINYL CHLORIDE WITH A MOLDED COMPONENT OF POLYOLEFIN

Erwin Moschter, Neunkirchen-Seelscheid, Fed. Rep. of Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 880,510, Feb. 23, 1978. This application Mar. 2, 1978, Ser. No. 882,904
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1977, 2707727
Int. Cl.³ B32B *27/40;* B29C *25/00*
U.S. Cl. 428—424.6 **11 Claims**

1. A method for the bonding of molded components of soft polyvinyl chloride containing polyvinyl chloride and a plasticizer for the polyvinyl chloride to molded components of a polyolefin with the use of heat, which comprises applying a layer of a crosslinkable synthetic resin varnish containing an acrylic resin that contains hydroxy groups and an isocyanate-containing curing agent to a surface of the molded component of the soft polyvinyl chloride to be bonded; and bonding the layer, prior to the end of the crosslinking reaction, to the molded component of polyolefin by flame laminating; said varnish layer-coated molded component of soft polyvinyl chloride and said molded component of a polyolefin being heated by a flame during said flame laminating.

4,259,409

ELECTROLESS PLATING PROCESS FOR GLASS OR CERAMIC BODIES AND PRODUCT

Anthony F. Arnold, Ringoes, N.J., assignor to SES, Incorporated, Newark, Del.

Filed Mar. 6, 1980, Ser. No. 127,676
Int. Cl.³ C23C *3/02*
U.S. Cl. 428—428 **12 Claims**

1. A process for producing an adherent layer of electroless metal on a glass or ceramic substrate which comprises:
(a) applying to the substrate at least one coat of an alkali metal silicate solution containing dissolved therein an amount of metal salt selected from nickel, palladium or platinum salts which upon reduction is catalytically effective for activating the deposition of metal from an electroless plating bath
(b) drying the coated substrate;
(c) heating the coated substrate at a temperature ranging between about 150° C. to about 500° C.; and
(d) electrolessly plating the resultant silicate coated substrate using an electroless plating bath having a pH of less than about 10.5.

4,259,410

RANDOM PROPYLENE COPOLYMERS FOR ELECTRIC CABLE INSULATION

Walter Dittmann; Albert Frese; Otto Hahmann; Johannes Plenikowski, all of Marl, and Helmut Klawitter, Herten, all of Fed. Rep. of Germany, assignors to Chemische Werke Huels Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 6, 1978, Ser. No. 893,911
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1977, 2715349
Int. Cl.³ B32B *15/08*
U.S. Cl. 428—461 **17 Claims**

1. In a process comprising passing current through an insulated electric cable, the improvement wherein the insulation of the insulated electric cable comprises partially crystalline, randomly copolymerized polypropylene having a proportion of ethylene, butene-1 and/or 1-hexane incorporated by polymerization of 1–6% by weight, a xylene-soluble proportion of 2–20% by weight, a viscosity value I of 200–400 cc./g., a melt flow index value ($MFI_{190/5}$) of 1–20 g./10 min., and an elongation value of above 700%.

4,259,411

ELECTROCONDUCTIVE COATING FORMULATIONS

Robert H. Windhager, and Mei H. Hwang, both of Pittsburgh, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 960,793, Nov. 15, 1978, abandoned. This application Sep. 5, 1979, Ser. No. 70,757
Int. Cl.³ B05D *1/38;* B32B *27/10;* G03G *5/10, 5/14*
U.S. Cl. 428—511 **5 Claims**

1. An electroconductive article having improved solvent holdout and a low degree of tackiness, said article comprising: a substrate; a barrier coating coated on at least one side thereof, said barrier coating consisting essentially of a copolymer of ethylene and vinyl acetate, a styrene-butadiene latex, sodium alginate or a fluorosurfactant and a modified starch; and an electroconductive coating overlaying said barrier coating.

5. A method of preparing an article as in claim 1, said method comprising the steps of applying the barrier coating to at least one side of the substrate, drying the barrier coated substrate, applying the conductive coating over the barrier coating and drying the conductive coating.

4,259,412

FLEXIBLE DOUBLE-LAYER POLYPROPYLENE LAMINATES

Pierpaolo Buzio, Rho, and Lucio Edefonti, Busto Arsizio, both of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Aug. 8, 1979, Ser. No. 64,702
Claims priority, application Italy, Aug. 8, 1978, 26567 A/78
Int. Cl.[3] B32B *27/08*
U.S. Cl. 428—516 **10 Claims**

1. A flexible double-layer polypropylene laminate consisting essentially of a biaxially oriented film consisting essentially of isotactic polypropylene with an atactic polypropylene content of less than 6% by weight and an intrinsic viscosity, measured in accordance with standard ASTM D-1601, of from 1.5 to 3.0 dl/g, adhesively bonded to a non-oriented film consisting essentially of isotactic polypropylene with an atactic polypropylene content of from 15 to 30% by weight, said polypropylene in said non-oriented film deriving directly from the polymerization of propylene and having an intrinsic viscosity of from 2 to 8 dl/g, as measured in accordance with standard ASTM D-1601.

4,259,413

COMPOSITE STAINLESS STEEL BORON-CONTAINING ARTICLE

Richard J. Taglang, and Walter C. Ziolkowski, both of Reading, Pa., assignors to Carpenter Technology Corporation, Reading, Pa.

Continuation of Ser. No. 797,555, May 16, 1977, abandoned. This application May 3, 1979, Ser. No. 35,631
Int. Cl.[3] B22F *3/00*
U.S. Cl. 428—548 **4 Claims**

1. Strip, wire, bar or sheet article having a brittle substrate of substantially fully densified stainless steel powder containing more than 1 weight percent boron, a stainless steel cladding on said substrate and metallurgically bonded thereto, said cladding containing from substantially no boron up to less than would embrittle said cladding, and said cladding being thick enough to withstand reduction incident to forming said article to a reduced final size.

4,259,414

NON-AIR POLLUTING, NON-PYROLYTIC UPGRADING OF COAL FOR CLEANER AND MORE EFFECTIVE ELECTRICAL POWER GENERATION

Richard Williams, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 29, 1979, Ser. No. 98,695
Int. Cl.[3] H01M *8/06*
U.S. Cl. 429—17 **5 Claims**

1. A non-pyrolytic, non-air polluting process of upgrading coal for cleaner and efficient electrical power generation comprising:

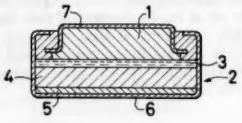
(a) reacting coal with water at a sufficient temperature to form carbon monoxide and hydrogen;
(b) separating the gases of step (a);
(c) reacting the carbon monoxide of step (b) with a hydroxide to form a formate;
(d) reacting the formate of step (c) with oxygen in a fuel cell to form a hydroxide, CO_2, and electricity;
(e) reacting the hydrogen of step (b) with oxygen in a fuel cell to form water and electricity;
(f) recycling the hydroxide from step (d) to step (e); and
(g) recycling the water from step (e) to step (a).

4,259,415

PRIMARY BATTERY

Kohki Tamura, Hitachi; Toshiki Kahara, Tokai; Tatsuo Horiba, Hitachi; Noboru Ebato, Hitachi, and Osamu Asai, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Co. Ltd., both of Tokyo, Japan

Filed Sep. 11, 1979, Ser. No. 74,522
Claims priority, application Japan, Sep. 14, 1978, 53/112222
Int. Cl.[3] H01M *6/14*
U.S. Cl. 429—90 **12 Claims**



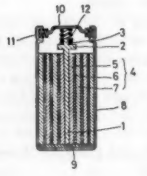
1. Primary battery comprising:
a non-aqueous electrolyte,
a negative active material comprising a light metal, and
a positive active material comprising a main positive active material which reacts with said negative active material through said non-aqueous electrolyte to form one part of a primary discharge of said battery, and a precursor which reacts with said negative active material through said non-aqueous electrolyte to form another part of the primary discharge and which produces a sub-positive active material as a reaction product of the other primary discharge reaction, the sub-positive active material reacting with said negative active material through said non-aqueous electrolyte to form a secondary discharge therebetween.

4,259,416

BATTERY

Hironosuke Ikeda, Hirakata; Shigeaki Noda, Miki, and Seiki Yoshida, Kakogawa, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Apr. 11, 1980, Ser. No. 139,203
Claims priority, application Japan, Apr. 16, 1979, 54-51019
Int. Cl.[3] H01M *2/26*
U.S. Cl. 429—94 **5 Claims**



1. A battery comprising:
a collector rod serving also as a winding core and having at one end thereof a flange formed into a non-circle shape,
positioning means formed at said flange,
a spiral electrode formed by band-shape positive and negative electrode plates with a separator layer therebetween wound upon said collector rod with one of said electrode plates electrically connected to said collector rod,
a battery vessel for housing said spiral electrode and to which the other of said electrode plates being electrically connected,
a lid for hermetically closing the opening of said battery vessel through insulating packing and for simultaneously forming a terminal of said one electrode plate, and
conductive resilient means having one end positioned by said positioning means and the other end in contact with said lid, said conductive resilient means being pressed by

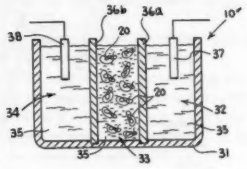
said flange and said lid to electrically connect said collector rod and said lid to each other.

4,259,417

IONIC BARRIER

Richard J. Bellows, and Patrick G. Grimes, both of Westfield, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Mar. 10, 1980, Ser. No. 128,822
Int. Cl.³ H01M 2/16
U.S. Cl. 429—101 **52 Claims**



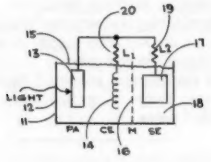
1. An electrochemical cell, comprising:
a first fluid-containing compartment;
a second fluid-containing compartment;
a nonselective porous membrane disposed between said first and second fluid-containing compartments;
means for passing ions through said membrane; and
a polyelectrolyte disposed in a fluid of at least one of said fluid-containing compartments for migrating towards, and forming an ionic barrier at, said membrane in response to the ionic flow through said membrane, said polyelectrolyte improving the efficiency of said cell by causing substantially only selected ions to pass through said membrane.

4,259,418

PHOTOELECTROCHEMICAL CELL WITH IN-SITU STORAGE USING HYDROGEN STORAGE ELECTRODES

William D. K. Clark, Warwick; Michael N. Hull, Bardonia, and John T. Arms, Monroe, all of N.Y., assignors to The International Nickel Co., Inc., New York, N.Y.

Filed Nov. 9, 1979, Ser. No. 92,741
Int. Cl.³ H01M 6/30, 6/36
U.S. Cl. 429—111 **7 Claims**



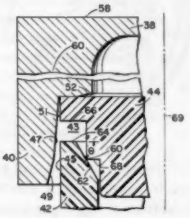
1. A photoelectrochemical system comprising
(a) an n-type photoelectrode;
(b) means whereby at least a portion of a surface of said n-type photoelectrode can be illuminated;
(c) an electrolyte in contact with said at least a portion of a surface of said n-type photoelectrode;
(d) means in said system to store the charges produced by action of light at the interface of said electrolyte and said at least a portion of said surface of said n-type photoelectrode;
(e) a hydrogen storage electrode connectable to said n-type photoelectrode by an electronic conductor and through hydrogen-containing electrolyte and comprising a member of the group of metals and intermetallic compounds capable of reacting with hydrogen to form a hydride and hydrides thereof; and
(f) means for electrically discharging said hydrogen storage electrode against an electrode energized by charges stored in said storage means.

4,259,419

VIBRATORY WELDING OF BATTERY COMPONENTS

Toshio Uba, Denver, and Tristan D. Juergens, Conifer, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Aug. 17, 1979, Ser. No. 67,573
Int. Cl.³ B29C 27/08; H01M 2/04
U.S. Cl. 429—174 **6 Claims**



4. A method for joining together in sealed relationship a heat sealable cover to a heat sealable open-mouthed container of an electrolyte-tight electrochemical cell or battery using vibratory energy, comprising:
disposing the cover in mating relationship within the mouth of the container thereby defining a mutual joint which extends to the outer wall of the container, one of said cover and container being provided with a ramped surface making an angle with the plane of the cover from about 50 to about 70 degrees, and the other said cover and container being provided with a multiple stepped surface including an energy concentrator portion;
positioning a resonant tool adjacent the cover in the area of the joint, said tool being provided with a depending skirt which extends along the outer wall of the container and beyond and in immediate adjacent proximity to the joint; and
energizing said tool causing the energy concentrator portion to make contact with the ramped surface and the cover and container to undergo relative reciprocating translating motion sufficient to melt the cover and container materials in the area of the joint and cause them to flow and fuse together in sealed relation, the depending skirt serving to maintain the cover and container in mutual alignment and to contain the flow of the melt at the outer wall of the container during energization of the tool.

6. A fused together integral cover and container in an electrochemical cell or battery made in accordance with the method of claim 4.

4,259,420

LITHIUM CHLORINE BATTERY CONTAINING THIONYL HALIDE

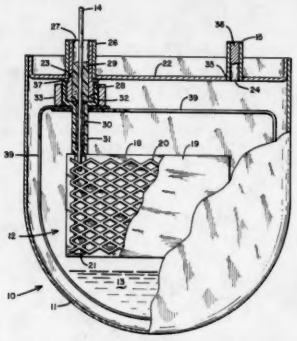
Vladimir Feiman, Roseville, and Eugene Luksha, Golden Valley, both of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Continuation-in-part of Ser. No. 106,868, Dec. 26, 1979, abandoned. This application Apr. 2, 1980, Ser. No. 136,438
Int. Cl.³ H01M 6/14
U.S. Cl. 429—196 **5 Claims**

1. In a primary electrochemical cell comprising a receptacle containing an anode, a cathode, and a non-aqueous electrolyte, and having means for delivering an electrical current flow therefrom;
(a) said anode consisting essentially of lithium;

(b) said cathode consisting essentially of iodine trichloride; and

(c) said non-aqueous electrolyte selected from the group



consisting of thionyl chloride and thionyl bromide, with said electrolyte containing a solute therein, the solute being selected from the group consisting of lithium aluminum chloride, iodine monochloride, and mixtures thereof.

4,259,421

IMPROVING ETCH-RESISTANCE OF CASEIN-BASED PHOTORESIST PATTERN

Abraham Goldman, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 4, 1979, Ser. No. 45,117

Int. Cl.³ G03C 5/00

U.S. Cl. 430—5 **12 Claims**

1. A method of improving the etch resistance of a casein-based photoresist pattern to a low specific gravity ferric chloride-based etchant solution, comprising, treating a dried casein-based photoresist pattern with a methylene blue dye solution which further cures the casein to thereby enhance its etch resistance, and contacting said photoresist pattern with a ferric chloride-based etchant solution having a specific gravity below about 1.40.

4,259,422

ELECTROGRAPHIC PROCESS FOR MAKING TRANSPARENCIES

Bruce W. Davidson; Frederick A. Pomeroy, both of Rochester, and M. Akram Sandhu, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 900,966, Apr. 28, 1978, abandoned. This application Nov. 13, 1978, Ser. No. 959,828

Int. Cl.³ G03C 5/00; G03G 13/22

U.S. Cl. 430—17 **22 Claims**

1. An electrographic copy process for forming a projection-viewable transparency comprising

a. forming a toned image of fusible toner particles on an image-receiving hydrophilic colloid layer of a substantially transparent image receiver element, and

b. fusing said toner particles to said hydrophilic colloid layer by contacting said toned image-bearing layer with a heated fuser surface coated with a release liquid which inhibits offsetting of said toner particles onto said fuser surface.

4,259,423

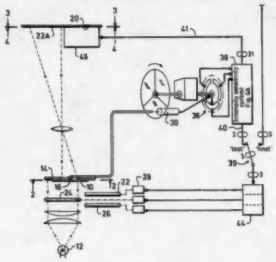
MEANS AND METHOD FOR COLOR PHOTOGRAPHY PRINTING

Armando M. Merlo, 10 Martha Eaton Way, Apt. 1812, North York, Ontario, Canada (M6M 5B3), assignor to Armando M. Merlo and Angelo Balsamo, both of Toronto, Canada

Filed Jan. 23, 1979, Ser. No. 5,817

Int. Cl.³ G03C 7/16, 7/00

U.S. Cl. 430—30 **9 Claims**



1. In a process of color photography using a process wherein the negative is used to produce a print while illuminated with radiation containing the ranges of color components sufficient to provide the colors required for the printing processes, and wherein the illumination time of the negative by light within a particular color component range is determined and terminated by insertion in the illumination path of a filter having an approximately complementary range to such particular range, and wherein a means corresponding to each particular range is actuable, responsive to a control signal to operate the complementary filter to terminate illumination by radiation within said range, the process of:

illuminating such negative during the preparation of a test print,

sensing the intensity of light transmitted through a selected area of said negative, said area being small relative to the area of said negative,

controlling the time of operation of the filters in accord with the sensed intensity to operate said complementary filters to provide the component ranges in said printing illumination over time intervals determined by the corresponding intensity, and of duration having an inverse relationship to the sensed intensity,

recording the time of illumination for each component range, in machine readable form,

thereafter, illuminating said negative to produce a final print, using substantially the same quality of illumination as used in the making of the test print,

automatically reading said recorded illumination times and operating said filters in accord with said mechanically read recorded times.

4,259,424

HEAT-DEVELOPABLE PHOTOSENSITIVE MATERIAL

Ichiro Endo, Yokohama; Hajime Kobayashi, Mitaka; Toshiyuki Komatsu, Kawasaki, and Shigeru Ohno, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 831,923, Sep. 7, 1977, abandoned. This application Feb. 5, 1979, Ser. No. 9,591

Claims priority, application Japan, Sep. 10, 1976, 51-108573

Int. Cl.³ G03C 1/02; G03G 16/00

U.S. Cl. 430—48 **19 Claims**

1. In the process for forming an electrostatic latent image on an electrostatic printing master by subjecting the printing master to an electric charging treatment, developing the electrostatic latent image thus formed and transferring the developed image onto an image-receiving material, wherein said master is formed by the steps of

(A) image wise exposing a heat developable photosensitive member comprising
(1) a support,
(2) an organic silver salt layer on said support which contains
(i) an organic silver salt capable of isolating silver upon reduction, and
(ii) a silver halide or halogen containing compound which reacts with the organic silver salt to produce silver halide, and
(3) a reducing agent contained in the silver salt layer or adjacent thereto to reduce the organic silver salt and form a latent image, and
(B) heat developing the latent image, the improvement comprising;
(a) employing an infrared rays absorbing layer between said support and said silver salt layer and
(b) conducting the step of heat developing the latent image by irradiating the image wise exposed member with infrared rays containing radiation, whereby said infrared rays absorbing layer converts said radiation to heat.

4,259,425

ELECTROGRAPHIC RECORDING MATERIAL

Irving Serlin, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed May 11, 1979, Ser. No. 38,156
Int. Cl.[3] G03G *5/04*
U.S. Cl. 430—56 **10 Claims**

1. An electrographic recording material comprising a conductive sheet support coated on at least one side with an electrically insulating layer comprising an intimate blend of a polymeric binder and up to 500 parts by weight of a finely divided pigment per 100 parts by weight of polymeric binder wherein the polymeric binder comprises an intimate blend of from about 40 to about 90 parts by weight of a polyvinyl acetal and from about 10 to about 60 parts by weight of a polystyrene or poly(α-methylstyrene) of molecular weight in the range of about 500 to about 1500, wherein the poly(vinyl acetal) is an interpolymer of a C_5 to C_9 vinyl acetal, a C_4 to C_{10} vinyl carboxylate and vinyl alcohol, of weight average molecular weight in the range of about 20,000 to 500,000, comprising less than about 30 weight percent vinyl carboxylate units and from about 5 to about 21 weight percent of vinyl alcohol units.

4,259,426

PRESSURE FIXABLE MICROCAPSULE TONER AND ELECTROSTATIC IMAGE DEVELOPING METHOD

Tetsuo Hasegawa, Tokyo; Shigeo Kato, Noda, and Yoshihiro Nishikawa, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1979, Ser. No. 18,289
Claims priority, application Japan, Mar. 6, 1978, 53/25295; Mar. 10, 1978, 53/27385; Jul. 27, 1978, 53/92236
Int. Cl.[3] G03G *13/20*
U.S. Cl. 430—98 **10 Claims**

1. In a process for developing a latent electrostatic image comprising contacting said image with a developer and then fixing said developed image using pressure rollers, the improvement of using as the developer a composition wherein the toner component thereof comprises a pressure fixable capsule toner composed of encapsulated particles each composed of a pressure fixable core material coated with an insulating shell material, which comprises having a main particle size of said capsule toner within a range from 5 to 25μ and a particle size distribution that the number of toner particles within a particle size range of ±3μ with respect to said main particle size is at least 70% of the total number of toner particles, and satisfying a relation $0.02 \leqq (a-b)/b \leqq 0.4$ wherein a and b respectively stand for the main particle sizes of capsule toner particle and core material in microns.

4,259,427

IMAGE-FORMING DEVELOPER

Yuzo Ohmuro, Machida; Nin-ichi Kamogawa, Tokyo; Shigeru Uetake, Sayama, and Yoshio Yamazaki, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 829,795, Sep. 1, 1977, abandoned. This application Apr. 2, 1979, Ser. No. 25,783
Int. Cl.[3] G03G *9/14*
U.S. Cl. 430—107 **1 Claim**

1. An image forming developer comprising toner particles, for use in a system wherein the developer is held on a delivery member by magnetic force and particles of the toner are charged while on said delivery member, an electrostatic latent image is produced on photoconductive material, said charged particles are contacted with said photoconductive material, and the developed image is transferred onto plain paper, said developer being characterized by:
A. said developer comprising ferromagnetic and insulating toner particles having as the main component resin, said ferromagnetic particles being arranged on a part of the resin surface, said resin and ferromagnetic particles being chargeable to different polarities by friction with each other so that the toner particles are charged by mutual friction in consequence of movement of said delivery member;
B. said developer having a volume specific resistance of at least 10^{14} Ω-cm; and
C. said developer having a potential decay ratio of less than 50% when measured by
(1) forming on zinc oxide photoconductive material a layer of the developer of a predetermined thickness,
(2) erasing the electrostatic latent image on said photoconductive material which served to form said layer, so as to reveal the potentials of said layer,
(3) measuring the potentials V_1 and V_2 of said layer after one minute from dark decay and after three minutes from the succeeding light decay, respectively, and
(4) determining the decay ratio on the basis of $(V_1-V_2)/V_1\times 100(\%)$.

4,259,428

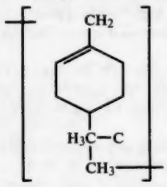
LIQUID DEVELOPER FOR ELECTROSTATIC LATENT IMAGE

Terukuni Tsuneda, Matsudo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 887,306, Mar. 16, 1978. This application Jan. 23, 1980, Ser. No. 114,462
Int. Cl.[3] G03G *9/12*
U.S. Cl. 430—115 **5 Claims**

1. A liquid developer for developing electrostatic latent images consisting essentially of:
(a) an electrically insulating isoparaffinic hydrocarbon carrier liquid having a volumetric resistance of at least 10^9 ohm-cm and a dielectric constant no greater than 3;
(b) a toner insoluble in said carrier liquid composed of a pigment or dye and a light transmitting thermoplastic resin having a softening point range from 50°–130° C.;
(c) a surface active agent soluble in said carrier liquid in amounts between 10^{-3} and 10 gm. per liter of liquid developer selected from the group consisting of lecithin, cephalin, an alkyl alanine containing an alkyl group having 8–20 carbon atoms; a metal salt of naphthenic acid wherein the metal is Ca, Mn, Pb, Zn, Fe, Al or Ni; a fatty acid zirconium salt containing an alkyl group having 2–30 carbon atoms; a metal salt of an alkyl benzene sulfonate containing an alkyl group having 8–20 carbon atoms, a dialkyl sulfosuccinate containing an alkyl group having 8–20 carbon atoms, a dialkyl naphthalene sulfonate containing an alkyl group having 8–20 carbon atoms, a polyoxyethylene sulfate and a dialkyl phosphate containing an alkyl group having 8–20 carbon atoms, wherein the metal is Na, K, Mg, Co, Ba, Al or Zn; and mixtures thereof; and

(d) a terpene resin having a repeating unit of the formula:



said terpene resin (i) having a softening point of at least 50° C, (ii) being partially soluble in the carrier liquid, and (iii) being present in amounts between 5–50% by weight based on the total weight of the toner, said terpene resin at least partially encapsulating the toner to provide a surface to absorb said surface active agent to promote the charged state of the toner, the remaining portion of said terpene resin tending to dissolve into said carrier liquid to enhance dispersability of said toner.

4,259,429

PROTECTION OF TONER IMAGES

Yvan K. Gilliams, Berchem; Walter F. De Winter, 'a-Gravenwesel, and Daniel M. Timmerman, Mortsel, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Continuation of Ser. No. 886,751, Mar. 15, 1978, abandoned, which is a continuation of Ser. No. 564,137, Apr. 1, 1975, abandoned. This application Aug. 16, 1979, Ser. No. 67,210

Claims priority, application United Kingdom, Apr. 3, 1974, 14803/74

Int. Cl.[3] **G03G** *13/10*

U.S. Cl. 430—124 **15 Claims**

1. A method of protecting a toner particle image deposited on a resin-containing material surface by electrophoretic development with an electrophoretic developing composition comprising toner particles dispersed in a hydrocarbon insulating liquid, which method comprises applying to the surface carrying the toner particle image immediately after said development and while said image is still wet with said hydrocarbon insulating liquid, a liquid fixing composition in which the liquid is a hydrocarbon liquid which is miscible with the hydrocarbon liquid of said electrophoretic developing composition and consisting essentially of (a) at least one liquid aliphatic hydrocarbon and (b) a film-forming copolymer, said copolymer being dissolved in said hydrocarbon liquid and being derived from:

(A) about 50–90% by weight of at least one monomer of the group consisting of C_1–C_5 aliphatic esters of methacrylic acid and vinyltoluene,

(B) about 10–50% by weight of at least one monomer of the group consisting of C_7–C_{24} aliphatic esters of methacrylic acid or acrylic acid and

(C) about 0–20% by weight of at least one monomer of the group consisting of C_1–C_5 aliphatic esters of acrylic acid and vinyl esters of C_1–C_{10} aliphatic acids,

the amount of said monomer (B) and of said monomer (C) if any being sufficient to render said copolymer soluble in the amount of at least about 2 g/100 ml at a temperature of about 20°–40° C. in the hydrocarbon liquid of said fixing composition.

4,259,430

PHOTORESIST O-QUINONE DIAZIDE CONTAINING COMPOSITION AND RESIST MASK FORMATION PROCESS

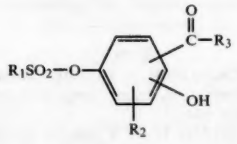
Leon H. Kaplan, Yorktown Heights, and Steven M. Zimmerman, Billings, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 465,777, May 1, 1974, abandoned. This application Jun. 25, 1976, Ser. No. 699,927

Int. Cl.[3] **G03C** *1/54, 5/00*

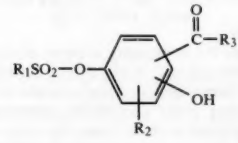
U.S. Cl. 430—191 **6 Claims**

1. A process for forming a positive resist mask comprising: providing a layer which includes a mixture consisting essentially of an alkali soluble novolac or resole resin, a light sensitive diazo compound having the general formula;



in which R_1 is a naphthoquinone-(1,2)-diazide radical, R_2 is selected from the group consisting of hydrogen and hydroxyl, and R_3 is selected from the group consisting of hydrogen, alkyl, aryl, alkoxy, amino and heterocyclic groups, and from about 3 to 30 percent by weight, based on the total weight of resist solids, of a thermally activated free radical initiator selected from the group consisting of acyl peroxides, peresters, hydroperoxides, alkyl peroxides, and azo-bis-(isobutyronitrile) on a substrate, exposing said layer patternwise to actinic radiation, removing the exposed portions of said layer with an alkaline developer solution, to form a resist pattern on said substrate and heating said resist pattern at a temperature above the second order glass transition temperature of said resin which activates said initiator to cross link said layer so as to inhibit flow of said resist pattern.

5. A positive-working photoresist composition consisting essentially of a mixture of an alkali soluble novolac or resole resin, a light sensitive diazo ketone having the general formula:



in which R_1 is a naphthoquinone-(1,2)-diazide radical, R_2 is selected from the group consisting of hydrogen and hydroxyl, and R_3 is selected from the group consisting of hydrogen, alkyl, aryl, alkoxy, aryloxy, amino and heterocyclic groups, and from about 3 to about 30 percent by weight, based on the total weight of resist solids, of a thermally activated free radical initiator selected from the group consisting of acyl peroxides, peresters, hydro peroxides, alkyl peroxides, and azo-bis-(isobutyronitrile).

4,259,431

METHOD FOR MAKING STATIONARY HEAT TRANSFER COEFFICIENT FIELDS VISIBLE BY PHOTOCHEMICAL MEANS

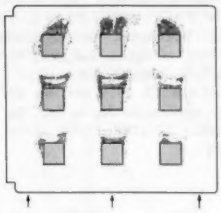
Heinrich Opitz, Erlangen, and Bernhard Montag, Forchheim, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 132,769

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1979, 2911821

Int. Cl.[3] **G03C** *5/26, 5/24;* **G01M** *9/00;* **G01D** *9/00*

U.S. Cl. 430—199 **6 Claims**



1. A method for making stationary heat transfer coefficient fields visible comprising:

(a) providing a swelled photographic film layer;

(b) applying said film layer to a surface of an article to be investigated;

(c) exposing said film layer to a flow of gas to form an undeveloped wet-film photogram having a characteristic residual moisture profile;

(d) removing said undeveloped wet-film photogram from the surface of the articles;

(e) contacting said undeveloped wet-film photogram with an unexposed dry photographic film and maintaining such contact for a time sufficient to transfer at least part of the characteristic residual moisture profile from said wet film photogram to said dry film thereby converting said dry film into a wet copy of said wet film photogram;

(f) separating said wet-film photogram and said wet copy;

(g) contacting said wet copy with a reactive gas to make visible the residual moisture profile therein; and

(h) developing and fixing said wet copy.

4,259,432

PHOTOPOLYMERIZABLE COMPOSITIONS HAVING COMBINED PHOTOINITIATORS

Syunichi Kondoh; Akihiro Matsufuji; Yuji Ohara, and Akira Umehara, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

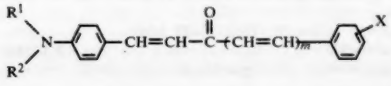
Filed Oct. 5, 1979, Ser. No. 82,361

Claims priority, application Japan, Oct. 6, 1978, 53-123317

Int. Cl.[3] **G03C** *1/68*

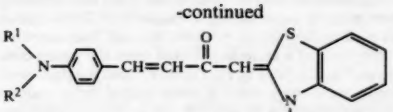
U.S. Cl. 430—281 **10 Claims**

1. In a photopolymerizable composition comprising (1) an addition-polymerizable compound having at least one ethylenically unsaturated double bond and (2) a photopolymerization initiator as essential components, the improvement which comprises that said photopolymerization initiator is a combination of (a) p-dialkylamino aromatic carbonyl compounds represented by the general formulae (1) to (4), (b) 5-isoxazolones represented by the general formula (5) and (c) 2,4,6-substituted-1,3,5-triazines represented by the general formula (6):

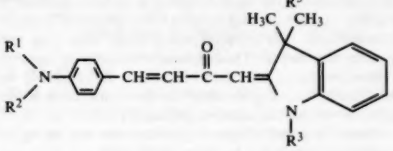


(1)

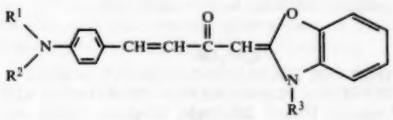
-continued



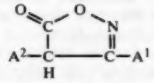
(2)



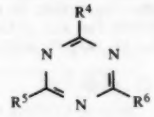
(3)



(4)



(5)



(6)

where R^1, R^2 and R^3 each represents an alkyl grop or a substituted alkyl group, which may be the same or different from one another, X represents a substituent having a Hammett's σ value in the range from −0.9 to 0.7, m represents 1 or 2, A^1 and A^2 each represents an alkyl group, a substituted alkyl group, an alkylcarbonyl group, an alkoxycarbonyl group, an aryl group, a substituted aryl group, an arylcarbonyl group or a hydrogen atom, which may be the same or different from each other, and R^4, R^5 and R^6 each represents an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group or an aralkyl group, which may be the same or different from each other, but at least one of R_4, R_5 and R_6 represents a mono-, di- or trihalomethyl group.

4,259,433

METHOD FOR PRODUCING DISK-RECORDING PLATES

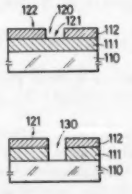
Yuzo Mizobuchi; Masamichi Sato, and Tsunehiko Takahashi, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 843,915, Oct. 20, 1977, abandoned. This application Apr. 24, 1979, Ser. No. 32,829

Claims priority, application Japan, Oct. 22, 1976, 51-126389

Int. Cl.[3] **G03C** *5/00*

U.S. Cl. 430—296 **14 Claims**



1. A method for producing a disc-recording plate from a composite layer consisting of a substrate, an etching layer

having a thickness of 1000 to 1500 Å overlying said substrate and a laser-sensitive layer having a thickness of 200 to 500 Å overlying said etching layer, wherein the said laser-sensitive layer is composed of a material selected from the group consisting of Au, Cu, Cr, Ni, Co, Pt, Pd, Ir, Rh and stainless steel, and wherein the etching layer is easily etched by a reactive sputter-etching treatment in an inert atmosphere of a halogenated hydrocarbon and the laser-sensitive layer has a resistance to the reactive sputter etching in said atmosphere of halogenated hydrocarbon, said method comprising: exposing the assembly to the irradiation of laser beams to selectively remove the laser-sensitive layer, and then subjecting the assembly to the reactive sputter-etching treatment in the atmosphere of the halogenated hydrocarbon under a pressure of 10^{-3} to 10^{-1} Torr to remove the etching layer at portions corresponding to the removed portions of the laser-sensitive layer.

4,259,434

METHOD FOR DEVELOPING POSITIVE ACTING LIGHT-SENSITIVE PLANOGRAPHIC PRINTING PLATE

Kotaro Yamasue; Hiroshi Takahashi; Hirokazu Sakaki, and Akira Nishioka, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Continuation-in-part of Ser. No. 954,033, Oct. 23, 1978, abandoned. This application Apr. 30, 1980, Ser. No. 145,105

Claims priority, application Japan, Oct. 24, 1977, 52-127338; Australia, Oct. 24, 1978, A7596; Fed. Rep. of Germany, Oct. 24, 1978, 2846256; France, Oct. 24, 1978, 78 30174; Japan, Aug. 8, 1978, 53-96307

Int. Cl.[3] **G03F** *7/02*

U.S. Cl. 430—302 **38 Claims**

1. A development method which comprises imagewise exposing a positive acting light-sensitive planographic printing plate comprising an aluminum support and a light-sensitive layer of an o-quinonediazide compound formed thereon, and then developing the exposed plate with a developer comprising an aqueous solution of an alkali metal silicate, adding a supplementary solution comprising an aqueous solution of an alkali metal silicate to the developer to compensate for the degradation of the developer brought about by development and/or by carbon dioxide in the air; wherein said developer comprises an aqueous solution of an alkali metal salt having an $[SiO_2]/[M]$ ratio of from 0.5 to 0.75 and an SiO_2 concentration of from 1 to 4% by weight based on the total weight of the developer, where $[SiO_2]$ represents the concentration of SiO_2 per unit volume expressed as gram-molecules, and [M] represents the concentration of the alkali metal per unit volume expressed as gram-atoms, and said supplementary solution comprises an aqueous solution of an alkali metal silicate having an $[SiO_2]/[M]$ ratio of from 0.25 to 0.75.

4,259,435

ADDITIVE METHOD OF MANUFACTURING METAL PATTERNS ON SYNTHETIC RESIN SUBSTRATES

Dirk J. Broer, and Arnoldus J. M. van den Broek, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 21, 1979, Ser. No. 50,737

Claims priority, application Netherlands, Jun. 23, 1978, 7806773

Int. Cl.[3] **G03C** *5/00*

U.S. Cl. 430—313 **2 Claims**

1. A method of forming a metal pattern on a substrate of which at least one major surface is formed of a synthetic resin comprising:

(a) irradiating a synthetic resin surface of said substrate with actinic light in accordance with the negative of the desired metal pattern in the presence of oxygen so as to form peroxide groups on the exposed surface of the synthetic resin;

(b) contacting the irradiated synthetic resin surface with a solution or dispersion of an oxide or salt of a metal capable of occurring in a higher valence state then present in said oxide or salt, said oxide or salt being capable of reducing noble metal ions to metal, thereby rendering the irradiated areas of said synthetic resin surface inactive;

(c) contacting the thus treated synthetic resin surface with a solution containing noble metal ions thereby forming a nuclear noble metal image in a pattern of the desired metal pattern; and

(d) intensifying said nuclear noble metal image by an electroless metal deposition so as to form the desired metal pattern.

4,259,436

METHOD OF MAKING A TAKE-CARRIER FOR MANUFACTURING IC ELEMENTS

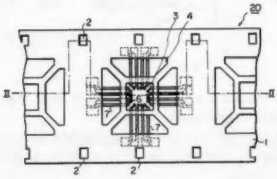
Seiichi Tabuchi, Yokohama, and Shinichi Wakabayashi, Samizumura, both of Japan, assignors to Shinko Electric Industries Co., Ltd., Nagano, Japan

Filed Apr. 23, 1979, Ser. No. 32,666

Claims priority, application Japan, Apr. 26, 1978, 53-49430

Int. Cl.[3] **B44C** *1/22;* **C03C** *15/00, 25/06;* **C23F** *1/02*

U.S. Cl. 430—314 **9 Claims**



1. A method of making a tape-carrier for manufacturing IC elements comprising:

a resist coating process for coating a layer of resist onto each surface of a metallic foil;

an alignment process in which said foil is inserted between two masks, a first having pump patterns therein and the second having patterns for lead terminals therein, said masks being in predetermined alignment with each other and said masks respectively contacting said resist layers;

an exposure process in which each said resist layer is exposed for removing portions of the second resist layer to form terminal leads from said metallic film for connection to respective terminals of an IC chip and for removing portions of the first resist layer where bumps are to be formed on said lead terminals for connection to the IC chip terminals;

a plating process for selectively plating a metal at said removed portions of said first resist layer to form said metallic bumps on said metallic foil,

an etching process for etching said metallic foil exposed by said portions of said second resist layer to form said lead terminals with said bumps on the end portions thereof; and

a resist removing process for removing the remaining portions of the resist layers from both surfaces of said metallic foil so that each of said bumps is entirely exposed on each respective lead terminal.

4,259,437

DEVELOPMENT INHIBITOR RELEASING COMPOUNDS AND THEIR USE IN PHOTOGRAPHIC MATERIALS

Terence C. Webb, Witham, England, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Sep. 5, 1979, Ser. No. 72,735

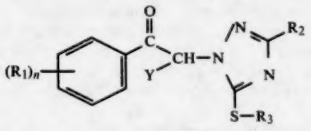
Claims priority, application United Kingdom, Sep. 18, 1978, 37260/78

Int. Cl.[3] **G03C** *7/00, 1/06*

U.S. Cl. 430—382 **3 Claims**

1. A light-sensitive photographic material which comprises,

coated on a support base, at least one silver halide emulsion layer, the said emulsion layer or a layer adjacent thereto comprising a compound of the general formula



wherein R_1 is hydrogen, hydroxy, halogen, nitro, hydroxymethyl, alkyl, alkoxy of 1 to 18 carbon atoms, $-NHCOR_4$, $-NHSO_2R_4$, $-COOR_4$, $-NH_2$, $-COOH$, $-SH$, $-SR_4$ where R_4 is as defined below and n is 1 or 2, R_2 is hydrogen or alkyl having 1 to 4 carbon atoms, R_3 is alkyl, aryl or aralkyl, Y is hydrogen, halogen, optionally substituted phenyl, $-COOR_4$, $-COR_4$,

or $-OR_4$ where R_4 is alkyl or aryl or a group

where Z represents the atoms necessary to complete an optionally substituted 5- or 6-membered heterocyclic ring or a 5- or 6-membered heterocyclic ring which is benzannelated.

4,259,438

METHOD FOR PREPARING PHOTOSENSITIVE SILVER HALIDE EMULSIONS

Martin L. Falxa, Cambridge, and Kenneth J. Meara, Burlington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jul. 3, 1978, Ser. No. 921,438
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—567 **12 Claims**

1. A method for forming photosensitive silver halide grains being substantially uniform in size having an average mean diameter within the range of about 0.5 to 2μ, wherein the halide content comprises at least about 0.5–10% iodide wherein the core of said grains is iodide rich with respect to the remainder of the grains, which comprises the steps of simultaneously introducing into an aqueous solution of gelatin, ammonium bromide and a water-soluble iodide salt (1) an ammoniacal solution of silver nitrate and (2) a solution of ammonium bromide or chloride.

4,259,439

DIRECT POSITIVE SILVER HALIDE EMULSION

Akira Tanaka; Akio Yoshida, and Kozo Haino, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Oct. 17, 1978, Ser. No. 952,214
Claims priority, application Japan, Oct. 28, 1977, 52-128715; Mar. 23, 1978, 53-33412; Jun. 1, 1978, 53-66245
Int. Cl.³ G03C *1/08, 1/36*
U.S. Cl. 430—582 **10 Claims**

1. A direct positive prefogged silver halide emulsion containing at least one dimethinecyanine dye wherein the 3-position of a pyrazolo[1,5-a]pyridine nucleus is bonded through a dimethine chain to the 1-, 2-, 3- or 4-position of a cyanine hetero ring nucleus, provided that where the bonding is in the 4-position said cyanine nucleus is a quinoline nucleus or a pyridine nucleus and where the bonding is in the 1- or 3-position said cyanine nucleus is an isoquinoline nucleus, said dimethinecyanine dye being present in an amount sufficient to sensitize said emulsion.

4,259,440

HYDROLYSIS AND ASSAY OF TRIGLYCERIDES

Surendra K. Gupta, and Panna R. Chaudhari, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed May 21, 1979, Ser. No. 40,559
Int. Cl.³ C12Q *1/48, 1/44*
U.S. Cl. 435—15 **20 Claims**

1. A method for determining the amount of triglycerides present in an aqueous fluid which comprises contacting the fluid with a mixture of a lipase and cholesterol esterase for a time sufficient to hydrolyze the triglyceride to glycerol and free fatty acids and determining the amount of triglycerides present based on the amount of glycerol produced.

4,259,441

PROCESS FOR RESOLVING D, L-LEUCINE

Dennis P. Bauer, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Sep. 17, 1979, Ser. No. 76,211
Int. Cl.³ C12Q *1/38*; C07B *19/02*
U.S. Cl. 435—23 **9 Claims**

1. A process for resolving a racemic mixture of D,L-leucine, said process comprising the steps of

(a) acylating a racemic mixture of D,L-leucine to form a mixture of N-acyl-D,L-leucine,

(b) esterifying the resultant N-acyl-D,L-leucine to form a mixture of N-acyl-D,L-leucine ester,

(c) subjecting the resultant mixture of N-acyl-D,L-leucine esters to the action of a proteolytic enzyme selected from the group consisting of microbially derived serine proteinases,

(d) separating the unreacted N-acyl-D-leucine ester from the resulting N-acyl-L-leucine, and

(e) recovering D-leucine and L-leucine from the separate N-acyl-D-leucine ester and N-acyl-L-leucine, respectively.

4,259,442

PROCESS OF RAPID IDENTIFICATION OF BACTERIA OF THE GENUS STREPTOCOCCUS

Jean-Pierre Gayral, Lagnieu, France, assignor to Laboratoire de Recherche Api S.A.R.L., Isere, France

Filed Sep. 26, 1978, Ser. No. 945,910
Claims priority, application France, Oct. 4, 1977, 77 30613
Int. Cl.³ C12Q *1/14*
U.S. Cl. 435—36 **13 Claims**

1. A process for the rapid identification of bacteria of the genus Streptococcus, comprising:

culturing an unknown Streptococcus bacteria in a culture medium containing glucose in an amount sufficient to stimulate the production of an enzyme characteristic of Streptococci bacteria and said enzyme being selected from the group consisting of pyrrolydonyl arylamidase, β-glucuronidase, β-glucosidase, N-acetyl-β-glucosaminidase and phosphatase, and thereby stimulating the production of said enzyme by said unknown bacteria;

mixing the so cultured unknown bacteria containing said enzyme with a substrate capable of reacting with said enzyme to produce a distinctly colored product or a product easily convertible to a distinctly colored product by reaction with a reagent; and

incubating the culture with the substrate to obtain the product whereby the bacteria is identified by colorimetric display.

4,259,443

SYNTHESIS OF ASCORBIC ACID FROM LACTOSE

James P. Danehy, South Bend, Ind., assignor to Bernard Wolnak and Associates, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 9,251, Feb. 5, 1979, abandoned. This application Jun. 12, 1979, Ser. No. 47,937

Int. Cl.[3] C12N 9/04; C12P 7/58, 7/60

U.S. Cl. 435—137 15 Claims

1. A method of synthesizing ascorbic acid from lactose comprising:

A. hydrolizing an aqueous solution of lactose to a first mixture of D-galactose and D-glucose;

B. converting the D-galactose and D-glucose in said first mixture to a second mixture of the akyl or aryl glycosides of D-galactose and D-glucose;

C. subsequently oxidizing said second mixture to a third mixture of the alkyl or aryl glycosides of D-galacturonic acid and D-glucuronic acids;

D. hydrolyzing said glycosides in said third mixture to a fourth mixture of D-galacturonic acid and D-glucoronic acid;

E. reducing said fourth mixture of D-galacturonic acid and D-glucuronic acid to a fifth mixture of L-galactonic acid and L-gulonic acid;

F. converting said fifth mixture of L-galactonic acid and L-gulonic acid to a sixth mixture of the γ-lactones of L-galactonic and L-gulonic acids; and

G. enzymatically oxidizing said γ-lactones of L-galactonic acid and L-gulonic acid, while in said sixth mixture, to ascorbic acid.

4,259,444

MICROORGANISMS HAVING MULTIPLE COMPATIBLE DEGRADATIVE ENERGY-GENERATING PLASMIDS AND PREPARATION THEREOF

Ananda M. Chakrabarty, Latham, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 7, 1972, Ser. No. 260,563

Int. Cl.[3] C12N 15/00

U.S. Cl. 435—172 18 Claims

1. A bacterium from the genus Pseudomonas containing therein at least two stable energy-generating plasmids, each of said plasmids providing a separate hydrocarbon degradative pathway.

7. An inoculum for the degradation of a preselected substrate comprising a complex or mixture of hydrocarbons, said inoculum consisting essentially of bacteria of the genus Pseudomonas at least some of which contain at least two stable energy-generating plasmids, each of said plasmids providing a separate hydrocarbon degradative pathway.

8. The inoculum of claim 7 wherein the hydrocarbon degradative pathways are selected from the group consisting of linear aliphatic, cyclic aliphatic, aromatic and polynuclear aromatic.

10. The inoculum of claim 8 wherein the bacteria having multiple energy-generating plasmids are of the specie *P. putida.*

4,259,445

IMMOBILIZED ENZYME CATALYST

Richard W. Glass, Bryan, Tex., and Joseph Glogowski, Pawtuckett, R.I., assignors to CPC International, Englewood Cliffs, N.J.

Filed Jun. 1, 1979, Ser. No. 44,729

Int. Cl.[3] C12M 11/10, 11/04; B01J 31/02

U.S. Cl. 435—178 18 Claims

1. A catalyst comprising subcellular particulates of vegetable material containing an enzyme system composed of different carbohydrate-transforming enzymes and being immobilized within a solid, carbohydrate-permeable matrix wherein the matrix contains an anti-browning agent, said matrix functioning to inhibit inactivation of said enzymes.

15. A process for the production of a catalyst having subcellular particulates of vegetables material containing an enzyme system composed of different carbohydrate-transforming enzymes and being immobilized within a solid, carbohydrate-permeable matrix comprised of an organic entrapping agent coagulated with polyvalent cation, said matrix functioning to inhibit inactivation of said enzymes, comprising macerating enzyme-containing vegetable material to produce subcellular particulates, combining said particulates with an aqueous coagulating agent and with divalent cation to encapsulate said particulates in a preservative matrix followed by dialyzing the matrix.

16. A process for the production of a catalyst having subcellular particulates of vegetable material containing an enzyme system composed of different carbohydrate-transforming enzymes and being immobilized within a solid, carbohydrate-permeable matrix comprised of an organic entrapping agent coagulated with polyvalent cation, said matrix functioning to inhibit inactivation of said enzymes, comprising macerating enzyme-containing vegetable material wherein said vegetable material is macerated in the presence of an anti-browning agent, to produce subcellular particulates, and combining said particulates with an aqueous coagulating agent and with divalent cation to encapsulate said particulates in a preservative matrix.

4,259,446

PROCESS FOR PREPARATION OF DEOXYRIBONUCLEASES

Tadahiko Ando; Takehiko Shibata, both of Tokyo; Eiji Hayase, Niiza, and Shukuko Ikawa, Wako, all of Japan, assignors to Rikagaku Kenkyusho, Wako, Japan

Filed Jul. 19, 1979, Ser. No. 58,802

Claims priority, application Japan, Jul. 28, 1978, 53/92094

Int. Cl.[3] C12N 9/22, 15/00

U.S. Cl. 435—199 5 Claims

1. A process for the preparation of deoxyribonucleases which comprises culturing a transformant belonging to the genus *Bacillus,* collecting a cell-free extract from cells obtained by the culturing, subjecting said cell-free extract to fractionation and/or separation, wherein the cells are those obtained during a period ranging from the logarithmic growth phase to the initial stage of the stationary growth phase, thereby to obtain at least two deoxyribonucleases, each of which possessing different substrate specificity and they are at least two members selected from Bsu R, Bsu 1247 I, Bsu 1231 I and Bsu 1231 II, said deoxyribonucleases being restriction enzymes.

4,259,447

PROCESS FOR THE PRODUCTION OF UROKINASE IN PURE CONDITION

Robert Häfeli, Zürich, Switzerland, assignor to Alpha Patent Limited, Tel-Aviv, Israel

Filed Jun. 29, 1979, Ser. No. 53,552

Claims priority, application Switzerland, Jun. 30, 1978, 7197/78

Int. Cl.[3] C12N 9/72

U.S. Cl. 435—215 35 Claims

1. A process for the production of pure urokinase of high concentration and purity starting from a preliminarily purified and concentrated urokinase crude solution comprising contacting this crude urokinase solution at a pH ≧ 6 with a porous solid matrix having a high specific area and having immobilized on the surface aprotinin by means of covalent, chemical bonds, separating off the carrier solution and subsequently eluting the adsorbed urokinase by means of an eluting agent at pH ≦ 4.5.

4,259,448

PROTEIN ADSORBENT AND PROCESS FOR THE PURIFICATION OF UROKINASE

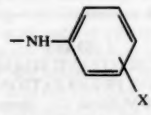
Hiroaki Nakamura, Kawasaki; Izumi Kumita, Ohiso; Yoshiji Sugita, Hiratsuka, and Hiedo Takagi, Ohiso, all of Japan, assignors to Nippon Soda Company, Ltd., Ohtemachi, Japan

Continuation-in-part of Ser. No. 866,794, Jan. 3, 1978. This application Oct. 10, 1979, Ser. No. 83,308

Int. Cl.[3] C12N 9/72

U.S. Cl. 435—215 2 Claims

1. A process for the purification of urokinase which comprises passing a solution containing crude urokinase through a column packed with a protein adsorbent comprising a water insoluble carrier and a ligand, said ligand having the formula



wherein X is selected from the group consisting of hydrogen, halogen, amino, lower alkyl and lower alkoxycarbonyl.

4,259,449

METHOD OF CULTIVATING CELLS OF ANIMAL AND HUMAN TISSUES

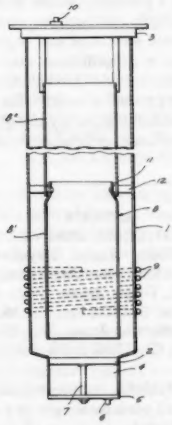
Hermann Katinger, Vienna, and Winfried Scheirer, Wiener-Neudorf, both of Austria, assignors to Chemap AG, Männedorf, Switzerland

Continuation of Ser. No. 814,415, Jul. 11, 1977, abandoned. This application Aug. 23, 1978, Ser. No. 936,600

Claims priority, application Austria, Jul. 15, 1976, 5213/76

Int. Cl.[3] C12N 5/02

U.S. Cl. 435—241 8 Claims



1. A method of cultivating cells of animal and human tissues, comprising the steps of providing a container for accommodating a nutrient solution having a predetermined weight and having a tubular peripheral wall and a bottom wall provided with a plurality of openings; introducing the cells into the nutrient solution in which they tend to settle; providing a gas chamber accommodating an oxygen-containing gas at a pressure which is just somewhat greater than necessary to counteract the weight of said nutrient solution, the interior of said gas chamber being separated from the interior of said container by said bottom wall and communicating with the interior of said container through said openings of said bottom wall; and maintaining said cells in said nutrient solution in a suspended state so as to prevent their settling, by introducing an oxygen-containing gas from said gas chamber through said openings into said container and thereby into said nutrient solution at said pressure which is just sufficient to overcome the weight of said nutrient solution while simultaneously dividing the gas into separate bubbles so that said bubbels of said oxygen-containing gas pass in said nutrient solution, and a substantially uniform exchange of oxygen in said nutrient solution is attained, and thereby the cells are sufficiently supplied with oxygen, but at the same time, are not subjected to such agitation of said nutrient solution which could otherwise damage the cells.

4,259,450

ANTIBIOTIC ACANTHOMYCIN AND PROCESS FOR PREPARING

Alexander D. Argoudelis, Portage; Thomas F. Brodasky, Kalamazoo, and Fritz Reusser, Portage, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 28, 1977, Ser. No. 772,552

Int. Cl.[3] C12N 1/20; C12P 1/06; A61K 35/00

U.S. Cl. 435—253 7 Claims

1. Antibiotic acanthomycin, which is active against *S. aureus*, and which in its essentially pure form

(a) has the empirical formula: $(C_{90}H_{139}N_{19}O_{42})_n$;

(b) has the following elemental analysis: C, 49.81; H, 6.47; N, 12.36; O (by difference), 31.36;

(c) has an optical rotation $[\alpha]_D^{25}$, −28.5° (c, 1, dimethylsulfoxide);

(d) is soluble in dimethylformamide and dimethylsulfoxide; slightly soluble (ca. 1–2 mg/ml) in methanol and ethanol, and relatively insoluble in water, ether, halogenated hydrocarbon and saturated hydrocarbon solvents; and salts (ammonium and sodium) are soluble in water and lower alcohols;

(e) has an equivalent weight of 2159;

(f) has a characteristic infrared absorption spectrum when dissolved in a mineral oil mull as shown in FIG. 1 of the drawings; and,

(g) has a characteristic ultraviolet absorption spectrum in methanol as shown in FIG. 2 of the drawings, and base addition salts thereof.

3. A process for preparing acanthomycin which comprises cultivating *Streptomyces espinosus* subsp. *acanthus*, having the identifying characteristics of NRRL 11081, and mutants thereof, in an aqueous nutrient fermentation medium under aerobic conditions until substantial antibiotic activity is imparted to said fermentation medium, and recovering acanthomycin.

4. A biologically pure culture of the novel microorganism *Streptomyces espinosus* subsp. *acanthus*, having the identifying characteristics of NRRL 11081, said culture being capable of producing the antibiotic acanthomycin in a recoverable quantity upon fermentation in an aqueous nutrient medium containing assimilable sources of carbon, nitrogen and inorganic substances.

4,259,451

ORGANISM ATCC 31643

Suzanna M. Steenbergen, Lakeside, and Kevin M. Young, San Diego, both of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 20, 1980, Ser. No. 161,625

Int. Cl.[3] C12N 1/20; C12R 1/01

U.S. Cl. 435—253 1 Claim

1. A pure culture of a variant of *Agrobacterium radiobacter*, ATCC 31643, said culture being capable of producing heteropolysaccharide.

4,259,452

METHOD OF PRODUCING FLEXIBLE RETICULATED POLYETHER POLYURETHANE FOAMS

Toshio Yukuta; Kazuo Yagura, and Nobuhisa Fuchigami, all of Yokohama, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed May 15, 1979, Ser. No. 39,414
Claims priority, application Japan, May 15, 1978, 53/56606
Int. Cl.[3] C08G *18/14, 18/32, 18/48*
U.S. Cl. 521—52 7 Claims

1. A method for producing a flexible polyether polyurethane foam by reacting a polyhydroxyl compound with an organic polyisocyanate in the presence of a catalyst, a blowing agent, a surfactant and other additives by a one-shot process, characterized in that as said polyhydroxyl compound there is used a mixture of (a) 50–90 parts by weight of poly(oxyethylene-oxypropylene)polyether polyol containing 51 to 90% by weight of ethylene oxide component and (b) 10–50 parts by weight of poly(oxyethylene-oxypropylene)polyether polyol containing not less than about 98% by weight of propylene oxide component to form a foam having a substantially skeletal reticulated structure.

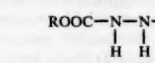
4,259,453

ACTIVATION OF BLOWING AGENTS

Rhomie L. Heck, III, Naugatuck, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Jun. 4, 1980, Ser. No. 156,291
Int. Cl.[3] C08J *9/10*
U.S. Cl. 521—85 8 Claims

1. A composition comprising a gas-expandable polymeric material, a hydrazodicarboxylate blowing agent of the formula



wherein R and R′ are the same or different and each is linear or branched alkyl having 1 to 8 carbon atoms, cycloalkyl having 3 to 8 carbon atoms, aryl having 6 to 10 carbon atoms, alkaryl having 7 to 10 carbon atoms, or aralkyl having 7 to 10 carbon atoms and an activator for said blowing agent selected from nickelbis (3, 5-di-t-butyl-4-hydroxybenzoate), a mixture of 2-hydroxy-4-n-octoxybenzophenone and nickelbis (2-oxy-4-n-octoxybenzophenone), nickel stearate, nickel trifluoroacetylacetonate, nickel, nickelbis, nickelammoniumsulfate, ethylenediaminetetra (methylenephosphonic acid), and hexamethylenediaminetetra (methylenephosphonic acid).

4,259,454

CURABLE ORGANIC RESIN COMPOSITIONS AND FOAMING METHOD

James V. Crivello, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 11,101, Feb. 12, 1979. This application Jun. 9, 1980, Ser. No. 157,393
Int. Cl.[3] C08J *9/00*
U.S. Cl. 521—113 4 Claims

1. A foaming method which comprises,

(1) agitating an exothermically curable composition comprising

(C) cationically polymerizable organic material

(D) an effective amount of a curing agent consisting essentially of a dialkylhydroxyarylsulfonium salt of the formula,

$$R(R^1)_aS]^+[Y]^-,$$

and an organic oxidant selected from an iodosoaromatic compound, a hydroquinone, and an organic peroxide having a decomposition accelerator selected from an organic amine and compound of a transition metal, and

(E) 1% to 30% by weight of (C), (D) and (E) of a volatile inert organic solvent, and

(2) thereafter allowing the ingredients of the resulting mixtures to react resulting in the production of exothermic heat and the simultaneous evaporation of the organic solvent and the cure of the cationically polymerizable organic resin,

where R is a $C_{(6-20)}$ aromatic radical having from 1 to 3 nuclearly bonded hydroxy radicals, R^1 can be the same or different $C_{(1-8)}$ alkyl radical or an alkylene radical capable of forming a cycloaliphatic or heterocyclic ring, Y is a nonnucleophilic anion, a is an integer equal to 0 or 2, and when R^1 is alkyl, a is 2, and when R^1 is alkylene, a is 1.

4,259,455

FIRE RETARDANT SILOXANE FOAMS AND METHOD FOR PREPARATION

Lloyd Hitchcock, 5658 Mohican Dr., Stevensville, Mich. 49127

Filed May 12, 1980, Ser. No. 148,825
Int. Cl.[3] C08J *9/00*
U.S. Cl. 521—122 15 Claims

1. A method of preparing an organosiloxane foam comprising mixing an organohydrogensiloxane having an average of at least three silicon-bonded hydrogen atoms per molecule, an average of no more than one silicon-bonded hydrogen atom per silicon atom and organic radicals selected from the group consisting of alkyl radicals having from one to six carbon atoms per radical, phenyl and 3,3,3-trifluoropropryl; a hydroxylated organosiloxane having an average of from greater than 1.0 to 2.5 silicon-bonded hydroxyl radicals per molecule and having an average of at least one organic radical per silicon atom selected from the group consisting of alkyl radicals having from one to six carbon atoms per radical, phyenyl and 3,3,3-trifluoropropyl; a platinum catalyst in an amount of from 5 to 200 parts by weight platinum per one million parts by weight of the combined weight of said organohydrogensiloxane and hydroxylated organosiloxane, said organohydrogensiloxane and said hydroxylated organosiloxane being present in sufficient amounts to provide a molar ratio of silicon-bonded hydrogen atoms to silicon-bonded hydroxyl radicals of 2.5 to 40; and an aluminum silicate, and thereafter allowing a foam to form.

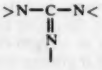
4,259,456

ODORLESS POLYOLEFIN RESIN COMPOSITIONS

Hisashi Yamada, Chiba; Kazuo Hayakawa, Tokyo, and Masayuki Makise, Chiba, all of Japan, assignors to The Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Apr. 2, 1979, Ser. No. 26,191
Claims priority, application Japan, Sep. 27, 1978, 53-118866
Int. Cl.[3] C08K *5/29, 5/42*
U.S. Cl. 525—3 2 Claims

1. An odorless polyolefin resin composition which comprises (a) from 0.01 to 2 parts by weight of a secondary alkane sulfonate alkali metal salt having from 12 to 20 carbon atoms per alkyl group and (b) from 0.01 to 1 part by weight of an organic nitrogen compound having at least one skeletal structure expressed by the formula



in a molecule, per 100 parts by weight of a blend composed of from 20 to 95% by weight of a polyolefin resin and from 80 to 5% by weight of an inorganic filler.

4,259,457

GRAFT POLYESTERS AND SIZED TEXTILES

Robert B. Login, Woodhaven, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 937,690, Aug. 28, 1978, abandoned. This application Jul. 23, 1979, Ser. No. 59,695

Int. Cl.[3] B05D *3/06*; C08L *67/06*; D02G *3/00*

U.S. Cl. 525—39 3 Claims

1. A textile sizing composition for a fibrous textile yarn consisting of a mixture of

I. an unsaturated polyester comprising the reaction product of:

(a) at least one polycarboxylic acid reactant comprising (1) a dicarboxylic acid reactant selected from the group consisting of dicarboxylic acids, corresponding dicarboxylic anhydrides, dicarboxylic acid esters, and their corresponding acyl halides or (2) a mixture of said dicarboxylic acid reactant with up to 20 mole percent of a polycarboxylic acid reactant having a functionality greater than two based upon 100 mole percent of said dicarboxylic acid reactant and

(b) at least one polyhydric alcohol reactant comprising (1) a diol or (2) a mixture of a diol and up to 20 mole percent of a polyhydric alcohol having a functionality greater than two based upon 100 mole percent of said polyhydric alcohol,

wherein a minor effective proportion of said dicarboxylic acid reactant or polyhydric alcohol reactant is alpha,beta-ethylenically unsaturated with

II. at least one monovinyl monomer reactant comprising at least one monovinyl monomer having at least one carboxylic group or a mixture of said vinyl monomer with any monofunctonal vinyl monomer

wherein said mixture is capable of being applied to said yarn as a solventless mixture of reactants, which can hardened by the application of heat or radiation, and which can be removed therefrom by neutralization or partial neutralization of said composition.

4,259,458

POLYARYLATE CONTAINING BLENDS

Lloyd M. Robeson, Whitehouse Station, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Aug. 9, 1979, Ser. No. 85,276

Int. Cl.[3] C08L *61/04*

U.S. Cl. 525—68 37 Claims

1. A molding composition comprising a blend of:

(a) a polyacrylate derived from at least one dihydric phenol and at least one aromatic dicarboxylic acid;

(b) a polyester derived from an aliphatic or cycloaliphatic diol, or mixtures thereof; and at least one aromatic dicarboxylic acid; and

(c) at least one thermoplastic polymer selected from the group consisting of an aromatic polycarbonate, a styrene resin, an alkyl acrylate resin, a polyurethane, a vinyl chloride polymer, a poly(aryl ether), a copolyetherester block copolymer, and a polyhydroxyether.

4,259,459

TREATMENT OF LATEX EMULSIFIERS

Carlton G. Force, Mt. Pleasant, S.C., assignor to Westvaco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 73,685, Sep. 10, 1979, abandoned, which is a continuation-in-part of Ser. No. 70,130, Aug. 27, 1979, abandoned. This application May 21, 1980, Ser. No. 152,045

Int. Cl.[3] C08L *93/00*

U.S. Cl. 525—154 10 Claims

1. In a process for treating mixtures which are useful as emulsion polymerization emulsifiers, the mixtures comprising tall oil fatty acids and resin acids, wherein the mixtures have been subjected to disproportionation, the improvement which comprises,

reacting the disproportionated mixtures with from 0.038% to 3.8% of an aldehyde selected from the group consisting of formaldehyde and paraformaldehyde in the presence of a catalytic amount of an acidic cataylst, wherein the catalyst is selected from the group consisting of iodine, hydriodic acid, sulfuric acid and p-toluene sulfonic acid at a temperature of from 25° C. to 100° C. for from 15 minutes to 1 hour, the temperature subsequently being raised to from 125° C. to 175° C. for from 30 minutes to 2 hours.

4,259,460

RUBBERY COMPOSITIONS

Herbert F. Schwarz, Sarnia, Canada, assignor to Polysar Limited, Ontario, Canada

Filed Dec. 5, 1979, Ser. No. 100,299

Claims priority, application Canada, Dec. 29, 1978, 318837

Int. Cl.[3] C08L *9/02*, *9/06*, *37/00*

U.S. Cl. 525—208 9 Claims

1. An improved rubbery composition which comprises, per 100 parts by weight of polymers, from about 15 to about 50 parts by weight of a vinyl chloride polymer, from about 10 to about 50 parts by weight of a butadiene-acrylonitrile polymer and from about 20 to about 60 parts by weight of a butadiene-styrene-tertiary amine polymer which contains from about 0.5 to about 10 millimoles of bound tertiary amine groups per 100 grams of polymer and which tertiary amine groups have been reacted with a dihalogen compound capable of forming quaternary ammonium salts with said tertiary amine groups.

5. The composition of claim 1 wherein said butadiene-acrylonitrile polymer is a butadiene-acrylonitrile polymer containing bound hydroxy or epoxy groups.

7. The composition of claim 5 wherein said polymer contains from about 50 to about 85 weight percent of butadiene and from about 4 to about 60 millimoles of bound hydroxy or epoxy groups per 100 grams of polymer, said hydroxy or epoxy groups being provided by a copolymerizable monomer selected from glycidyl acrylate or methacrylate, vinyl cyclohexene monoxide, allyl or methallyl glycidyl ether, hydroxyethyl acrylate or methacrylate, hydroxypropyl crotonate, di(2-hydroxyethyl) maleate or fumarate and hydroxyethyl vinyl ether.

4,259,461

PROCESS FOR PRODUCING PROPYLENE-ETHYLENE BLOCK COPOLYMERS

Akinobu Shiga; Masahiro Kakugo; Yoshiharu Fukui; Koji Yamada; Hajime Sadatoshi; Kazuki Wakamatsu, and Hiroshi Yoshioka, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 22, 1979, Ser. No. 41,462

Claims priority, application Japan, May 22, 1978, 53-61467; Jun. 29, 1978, 53-79383

Int. Cl.[3] C08F *297/08*

U.S. Cl. 525—247 11 Claims

1. In a process for producing propylene-ethylene block copolymer which comprises, in a first stage initiating polymerization of propylene alone or with a minor amount of ethylene in the substantial absence of an inert solvent and continuing the polymerization in liquified monomer or in the gas phase so that the ethylene content in the polymer produced in the first stage is not more than about 4% by weight to produce crystalline polypropylene accounting for about 60 to 95% by weight of the final block copolymer and, subsequently, in the second stage, randomly copolymerizing propylene and ethylene in liquified monomer or in the gas phase or polymerizing ethylene alone in the gas phase so that the ethylene content in the polymer block produced in the second stage is 10% by weight or more to produce an ethylene-propylene copolymer block or an ethylene homopolymer block accounting for 5 to 40% by weight of the final block copolymer, in the presence of a cata-

lyst system, wherein said polymerization is carried out at a temperature of 0° to 90° C. under a pressure at which the monomer is present in the liquid form or is carried out in a gas phase at a temperature below the softening point of the polymer product under a pressure of about atmospheric pressure to 60 kg/cm², the improvement which comprises said catalyst system comprising:

a titanium trichloride solid catalyst component obtained by

(a) reacting

(i) a reduced product obtained by reducing titanium tetrachloride with an organoaluminum compound of the formula $R'_nAlX'_{3-n}$, wherein R' represents a straight chain or branched chain alkyl group, an alicyclic group or an aryl group each having up to 18 carbon atoms, X' represents a halogen atom or a hydrogen atoms and n is a number $1 \leqq n \leqq 3$,

(ii) a heat treated solid obtained by heat treating the reduced product (i) in the presence or absence of an inert hydrocarbon solvent at a temperature of about 50° to 120° C., or

(iii) a reaction product obtained by further reacting the reduced product (i) with an aluminum compound of the formula $R'' pAlX_{3-p}$, wherein R'' represents a straight chain or branched chain alkyl group, an alicyclic group or an aryl group each having up to 18 carbon atoms, X represents a halogen atom and p is a number $1 \leqq p \leqq 1.5$;

with a mixture of halogen or a halogen compound and an ether;

(b) reacting

(i) a reduced product obtained by reducing titanium tetrachloride with an organoaluminum compound of the formula $R'_nAlX'_{3-n}$, wherein R' represents a straight chain or branched chain alkyl group, an alicyclic group or an aryl group each having up to 18 carbon atoms, X' represents a halogen atom or a hydrogen atom and n is a number $1 \leqq n \leqq 3$, or

(ii) a heat treated solid obtained by heat treating the reduced product (i) in the presence or absence of an inert solvent at a temperature of 20° to 100° C.,

with an ether and then reacting the ether-treated solid with titanium tetrachloride, or further reacting the resulting product with a mixture of halogen or halogen compound and an ether; or

(c) reducing titanium tetrachloride with an organoaluminum compound of the formula $R'_nAlX'_{3-n}$, wherein R' represents a straight chain or branched chain alkyl group, an alicyclic group or an aryl group each having 1 to 18 carbon atoms, X' represents a halogen atom or a hydrogen atom and n is a number $1 \leqq n \leqq 3$, reacting the reduced product with an ether compound, and then reacting the ether treated compound with an aluminum compound of the formula $R''pALX_{3-p}$, wherein R'' represents a straight chain or branched chain alkyl group, an alicyclic group, or an aryl group, each having 1 to 18 carbon atoms, X represents a halogen atom and p is a number $1 \leqq p \leqq 1.5$ and further reacting said product with an ether or a mixture of a halogen or a halogen compound and an ether,

[B] an organoaluminum compound of the formula R_mAlY_{3-m}, wherein R represents a straight chain or branched chain alkyl group having 1 to 8 carbon atoms, Y represents a halogen atom or a hydrgen atom or an alkoxy group and m is a number $2 \leqq m \leqq 3$, and, optionally,

[C] an electron donor as a third component, selected from the group consisting of amines, ethers, esters, derivatives of sulfur, halogens, benzene, azulene, organic or inorganic nitrogen and phosphorus compounds,

said component [B] being used in concentration of about 0.05 to 50 m mol per mol of the monomer, the molar ratio of [B] to [A] being about 1/1 to 500/1, the molar ratio of [C] to [A] being about 0.1 to 10 when [C] is used, and said catalyst [A] being used to produce at least 8,000 g block copolymer per gram of solid catalyst.

4,259,462

HARDENABLE COMPOSITION CONTAINING DIISOPROPYLBENZENE DIHYDROPEROXIDE

Tatsuo Nakano; Shozo Hori, and Ikuji Kishi, all of Machida, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 863,049, Dec. 21, 1977, Pat. No. 4,174,311. This application Jun. 18, 1979, Ser. No. 49,143

Claims priority, application Japan, Feb. 22, 1977, 52/18478

The portion of the term of this patent subsequent to Nov. 3, 1996, has been disclaimed.

Int. Cl.³ C08F *4/34, 293/00, 255/06, 264/04*

U.S. Cl. 525—263 **4 Claims**

1. A hardenable composition which consists essentially of (1) an acrylate and/or a methacrylate monomer wherein the monomer contains more than 50 wt.% of acrylate and/or methacrylate, (2) more than 0.5 wt. part of a hardener consisting essentially of diisopropylbenzene dihydroperoxide, (3) more than 0.01 wt. part of a hardening accelerator to 100 wt. parts of total monomers and (4) an additive which improves the impact strength and peeling strength of said composition.

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VULCANIZABLE COMPOSITIONS BASED ON COPOLYMERS OF VINYLIDENE FLUORIDE AND CONTAINING VULCANIZATION ACCELERATORS WHICH ARE AMINOPHOSPHINIC COMPOUNDS

Giovanni Moggi, Milan, and Livio Mancini, Peschiera Borromeo, both of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Dec. 8, 1978, Ser. No. 968,029

Claims priority, application Italy, Dec. 14, 1977, 30688 A/77; Nov. 20, 1978, 29945 A/78

Int. Cl.³ C08F *8/40, 214/22*

U.S. Cl. 525—331 **7 Claims**

1. Vulcanizable compositions consisting of:

(I) 100 parts by weight of an elastomeric copolymer of vinylidene fluoride, with at least one fluorinated or chlorofluorinated, ethylenically unsaturated monomer;

(II) 1–40 parts by weight of an acceptor of inorganic acid, consisting of at least one basic oxide of a bivalent metal, selected from the group consisting of magnesium oxide, calcium oxide, lead monooxide, zinc oxide and/or at least one basic lead phosphite;

(III) 0.5–10 parts by weight of at least one basic compound selected from the group consisting of calcium, strontium, barium, sodium and potassium phosphates;

(IV) 0.5–15 parts by weight of a vulcanizing agent based on at least one polyhydroxyl and/or polythiol compound of general formulae:

$$A(XZ)_n \text{ and/or } ZX—R—XZ$$

wherein A is an arylene radical; n is a whole number equal to at least 2; X is oxygen or sulphur; Z is hydrogen or an alkaline metal; R is an alkylene, cycloalkylene, mono- or polyalkylencycloalkyl, alkylendiaryl or oxoalkylendiaryl radical; and

(V) 0.05–5 parts by weight of a vulcanization accelerator which is an aminophosphinic derivative of the general formulae:

$$\begin{matrix} P(NR'R'')_qR'''_{3-q} \\ \| \\ CR^{iv}R^{v} \end{matrix} \quad \text{(I)}$$

$$\begin{matrix} P(NR'R'')_qR'''_{3-q} \\ \| \\ N—R^{vi} \end{matrix} \quad \text{(II)}$$

wherein:

R', R'' and R''', the same or different, are alkyl, cycloalkyl, aryl, arylalkyl, oxyalkyl or polyoxyalkyl groups having a free or etherified terminal OH function and containing from 1 to 18 carbon atoms; such an alkyl,

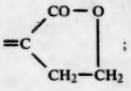
cycloalkyl, aryl, arylalkyl, oxyalkyl or polyoxyalkyl group substituted by halogen, CN, OH or carbalkoxy; or such alkyl, cycloalkyl, aryl, arylalkyl, oxyalkyl or polyoxyalkyl groups in which R′ and R″ together form, with the nitrogen atom, a heterocyclic ring;

q is a whole number comprised between 1 and 3;

R^{iv} is hydrogen, an alkyl group containing from 1 to 16 carbon atoms, or a carbalkoxy group —COOR in which R is a C_1–C_8 alkyl;

R^{v} is a carbalkoxy group —COOR in which R is a C_1–C_8 alkyl, the —CN group, the $—CONH_2$ group, a C_1–C_{16} alkyl group, or an aryl group; or

R^{iv} and R^{v} form, with the carbon atom, the cyclic group



R^{vi} is an aryl group, a carbalkoxy group —COOR in which R is a C_1–C_8 alkyl, a carbaryloxy group —COOAr in which Ar is aryl; or R^{vi} is an ionic group having one of the formulae:

$$[P(NR'R'')_nR'''_{4-n}]^{m+} \cdot Y^{m-} \quad \text{(III)}$$

$$R[P(NR'R'')_rR'''_{3-r}]_2^{+} \cdot pY^{m-} \quad \text{(IV)}$$

wherein:

R′, R″, R‴ have the same meanings as in formulae (I) and (II);

R is a bivalent alkylenic, arylenic or oxoalkylenic radical;

n is a whole number comprised between 1 and 4;

r is a whole number comprised between 1 and 3;

m is a whole number comprised between 1 and 3, corresponding to the valence of anion Y;

m.p. = 2, and

Y is an organic or inorganic anion of valency m.

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CYCLIC PHENOL-ALDEHYDE RESINS

Rudolf S. Buriks; Allen R. Fauke, both of St. Louis, and John H. Munch, Kirkwood, all of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

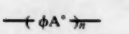
Continuation-in-part of Ser. No. 172,869, Aug. 18, 1971, abandoned. This application May 13, 1976, Ser. No. 686,096

Int. Cl.³ C08G *8/12, 8/28, 8/36, 8/32*

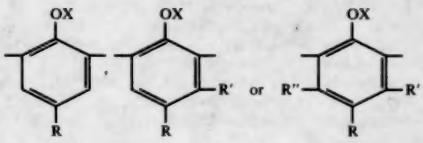
U.S. Cl. 525—480 **19 Claims**

1. A process of preparing an infusible, relatively organic solvent insoluble phenol-aldehyde resin having a melting point above 300° C. and containing a substantial proportion of cyclic polymer which comprises reacting a phenol substituted in the para position and unsubstituted in both ortho positions with at least one mole of an aldehyde per mole of phenol in a non-polar solvent and in the presence of a catalytic amount of a base, under mildly basic conditions at a temperature from about 80° C. to the decomposition temperature of the reactants or products, at least the final stage of the reaction being carried out under reflux with the water formed distilling off until all of said water has been removed and a phenol-aldehyde resin insoluble in the reaction medium is formed.

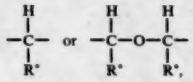
18. A derivative of a cyclic phenol-aldehyde resin having the formula



where n is 4 to 16, ϕ is



and A° is



X being SiR_3''', an alkali metal, alkyl, alkenyl, aryl, cycloalkyl, heterocyclic, alkaryl, aralkyl, or a sulfonic acid moiety, R, R′, R″ and R‴ being alkyl, alkenyl, aryl, cycloalkyl, heterocyclic, alkaryl, aralkyl, halo, alkoxy or phenoxy, R° being hydrogen, alkyl, aryl, cycloalkyl, alkaryl, aralkyl or heterocyclic, each ϕ and A° being the same or different and R, R′, R″ and R‴ being the same or different, said derivatives being insoluble or only slightly soluble in paraffinic hydrocarbons, ketones, esters, alcohols, water and dimethylformamide.

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BIMODAL COEXTENDANT SUSPENSION POLYMERIZATION SYSTEM

Eugene S. Barabas, Watchung, N.J., assignor to GAF Corporation, New York, N.Y.

Filed May 1, 1978, Ser. No. 901,692

Int. Cl.³ C08F *2/18, 4/34, 120/00, 120/10*

U.S. Cl. 526—65 **14 Claims**

1. A bimodal co-extendant suspension polymerization process comprising the steps of:

(a) forming a liquid suspension medium by mixing between about 10 weight % and about 50 weight % of a polymerizable hydrophilic monomer with water to form the liquid suspension medium having a first initial viscosity;

(b) contacting said suspension medium with droplets of a monomer selected from the group of a polymerizable organophilic monomers having a Tg less than −45° C. under agitation to disperse and suspend said droplets in a heterogeneous mixture;

(c) reacting said heterogeneous mixture in the presence of a free radical catalyst and maintaining a higher viscosity of the suspension medium than said first initial viscosity, said viscosity of said suspension medium being maintained between about 1,000 and about 100,000 cps during the reaction of said organophilic species, so as to polymerize said organophilic monomer as discrete solid polyorganophilic particles while separately polymerizing said hydrophilic monomer in the aqueous phase as a polyhydrophilic polymer, the selection of said hydrophilic monomer of the suspension medium being such that it possesses a higher rate of reaction than the organophilic monomer;

(d) separating said particles from said aqueous phase; and

(e) recovering said solid particles as the organophilic polymer of the process and separately recovering from said remaining aqueous phase the hydrophilic polymer, as the second product of the process.

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PREPARATION OF AN ACTIVE $TiCl_3$ CATALYST

Andras G. T. G. Kortbeek, and Adrianus A. Van Der Nat, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 4,435, Jan. 18, 1979, Pat. No. 4,192,774. This application Nov. 8, 1979, Ser. No. 92,393

Claims priority, application United Kingdom, Jan. 27, 1978, 3377/78

Int. Cl.³ C08F *4/64*

U.S. Cl. 526—142 **4 Claims**

1. In the stereospecific polymerization of an alpha-olefin of 2 to 8 carbon atoms per molecule with a catalyst comprising a $TiCl_3$ component produced by reducing $TiCl_4$ with an organo-aluminum compound, the improvement which consists of employing as the $TiCl_3$ component a solid composition of 0.1 to 30 millimicrons average particle size, produced by

(a) premixing $TiCl_4$ with a complexing agent in an inert organic solvent, the molar ratio complexing agent: $TiCl_4$ being within the range from 0.3:1 to 2:1;

(b) premixing the organo-aluminum compound with a complexing agent in an inert organic solvent, the molar ratio complexing agent:organo-aluminum compound being at least 0.25:1;

(c) carrying out the reduction to $TiCl_3$ and precipitation of $TiCl_3$ in a single step by combining at least one stoichiometric equivalent of $TiCl_4$ in the premixed composition of step (a) with one stoichiometric equivalent of the organo-aluminum compound in the premixed composition of step (b) over a period of less than one hour at a temperature within the range 60° to 110° C.,

resulting in a reaction mixture having a concentration of at least 0.2 moles/liter of $TiCl_3$ particles having an average particle size of 50-500 millimicrons, subjecting said $TiCl_3$ particles to size reduction treatment to reduce the average particle size to less than 50 millimicrons and classifying the resulting $TiCl_3$ particles to recover said fraction having an average particle size of about 0.1—30 millimicrons.

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HYDROPHILIC CONTACT LENS MADE FROM POLYSILOXANES CONTAINING HYDROPHILIC SIDECHAINS

Philip L. Keogh, Pittsford; Jay F. Kunzler, Canadaigua, both of N.Y., and Gregory C. C. Niu, Lexington, Mass., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Dec. 10, 1979, Ser. No. 102,010

Int. Cl.³ C08F *30/08*

U.S. Cl. 526—279 **16 Claims**

1. A hydrophilic, hydrolytically stable, biologically inert contact lens with the capability of transporting oxygen sufficiently to meet the requirements of the human cornea, comprising a polysiloxane monomer having the following formula:

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ETHYLENE-α-OLEFIN-POLYENE RUBBERY TERPOLYMER AND PROCESS FOR PRODUCTION THEREOF

Hirokazu Kajiura; Kazuhiko Murata, both of Ohtake; Hidekuni Oda, Iwakuni, and Tatsuo Yasutake, Ohtake, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Aug. 7, 1979, Ser. No. 64,516

Claims priority, application Japan, Aug. 17, 1978, 53/99456; Aug. 17, 1978, 53/99457

Int. Cl.³ C08F *210/18*

U.S. Cl. 526—283 **6 Claims**

1. A rubbery copolymer of ethylene, an α-olefin having 3 to 10 carbon atoms and a non-conjugated diene, characterized by having

(A) an ethylene/α-olefin mole ratio of from 50/50 to 95/5,

(B) an iodine value of from 5 to 50,

(C) an intrinsic viscosity [η], measured in decalin at 135° C., of from 1.0 to 6.0 dl/g,

(D) a weight average molecular weight/number average molecular weight ratio (Mw/Mn) of from 4 to 12, and

(E) an iodine value index α_1 for the lower molecular weight components and an iodine value index α_2 for the higher molecular weight components, said α_1 and α_2 falling within the ranges $-10 \leqq \alpha_1 \leqq -1$ and $1 \leqq \alpha_2 \leqq 10$.

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POLYMER OF N-(ACRYLOYLOXYARYL) SULFONAMIDES

John C. Wilson, and Paul D. Yacobucci, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

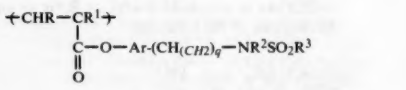
Filed Mar. 21, 1979, Ser. No. 22,407

Int. Cl.³ C08F *20/38*

U.S. Cl. 526—288 **9 Claims**

1. A polymer having an equivalent molecular weight in the range from 10,000 to 500,000, said polymer comprising:

(a) about 1 to 100 mole percent of one or more units having the formula:



wherein:

R and R^1 are independently hydrogen, halide or alkyl;

R^2 and R^3 are independently hydrogen, alkyl, cycloalkyl, aryl or aralkyl;

q is 0 or 1; and

Ar is arylene having from 6 to 18 carbon atoms; and

(b) 0 to 99 mole percent of one or more additional polymerized ethylenically unsaturated polymerizable monomers.

4,259,470

PROPYLENE/1-BUTENE OR 1-PENTENE/HIGHER 1-OLEFIN COPOLYMERS USEFUL AS PRESSURE-SENSITIVE HOT-MELT ADHESIVES

Jimmy R. Trotter; Richard L. McConnell, and Frederick B. Joyner, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 30, 1979, Ser. No. 71,141

Int. Cl.³ C08F *210/06, 210/08, 210/14*

U.S. Cl. 526—348.2 **8 Claims**

1. An adhesive composition capable of being used as a hot melt, pressure sensitive adhesive comprising a substantially amorphous propylene/1-butene or 1-pentene/higher 1-olefin copolymer, said copolymer containing about 10 to 55 mole % propylene, about 15–60 mole % of either 1-butene or 1-pentene and about 5 to 39 mole percent of at least one higher alpha-olefin of 6 to 10 carbon atoms, said copolymer having a melt viscosity of 5,000 to 75,000 centipoise at 190° C. and a density less than about 0.87 and a Tg of about −18° to about −35° C.

4,259,471

POLYPHENYLETHER-BRIDGED POLYPHTHALOCYANINE

Teddy M. Keller, Alexandria, Va., and James R. Griffith, Riverdale Heights, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 24, 1979, Ser. No. 42,176

Int. Cl.³ C08G *73/06*

U.S. Cl. 528—9 **10 Claims**

1. A thermosetting resin which comprises a polyphthalocyanine having a repeating unit selected from the class consisting of $-PcO_2(\phi O)_{2x}-$, $-M.PcO_2(\phi O)_{2x}-$, $-MX.PcO_2(\phi O)_{2x}-$, and mixtures thereof wherein x is 1 to 10, M is a metal selected from the class consisting of copper, magnesium, zinc,

iron, cobalt, nickel, palladium, platinum, manganese, chromium, molybdenum, vanadium, beryllium, silver, mercury, aluminum, tin, antimony, calcium, barium, cadmium, and mixtures thereof, and MX is a salt selected from the class consisting of cuprous chloride, cuprous bromide, cuprous cyanide, cuprous ferricyanide, zinc chloride, zinc bromide, zinc iodine, zinc cyanide, zinc ferricyanide, zinc acetate, zinc sulfide, ferrous chloride, ferric chloride, ferrous ferricyanide, ferrous chloroplatinate, ferrous fluoride, ferrous sulfate, cobaltous chloride, nickel sulfate, nickel carbonate, stannic chloride, and mixtures thereof and the phenyl groups are attached at the meta or para position.

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TWO COMPONENT OLIGOMERIC PHOSPHATE/ISOCYANATE COMPOSITION

Mohinder S. Chattha, Livonia, and Henk Van Oene, Detroit, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 4, 1980, Ser. No. 109,600
Int. Cl.³ C08G *59/14, 18/58*
U.S. Cl. 528—72 **11 Claims**

1. A thermosetting composition comprising:

I. A first component comprising an oligomeric hydroxy functional phosphate ester having a number average molecular weight of between about 500 and about 5000 and being prepared by reaction of:

(a) polyepoxide resin having a number average molecular weight of between about 120 and about 4500 and being selected from the group consisting of aliphatic, cycloaliphatic and aromatic polyepoxides; and

(b) phosphate acid ester having the formula

$$(RO)_n-\overset{\overset{O}{\|}}{P}-(OH)_{3-n}$$

wherein n = 1 to 2 and R is selected from alkyl and aryl groups containing between about 1 and about 20 carbon atoms, said phosphate ester and said polyepoxide being reacted in such amounts that there are between about 0.5 and about 1 acid groups per epoxy group in said reaction mixture; and

II. A second component comprising isocyanate crosslinking agent selected from the group consisting of aliphatic, cycloaliphatic and aromatic polyisocyanates, said second component being incorporated and mixed with said first component immediately prior to disposition of said composition for its intended use in an amount such that there are between about 0.75 and about 1.2 reactive isocyanate groups per hydroxyl group in said first component.

4,259,473

PROCESS FOR MAKING SELF-CURING OR CURABLE MATERIALS FROM COAL HYDROGENATION DISTILLATE RESIDUES

Ingo Romey, Hünxe, Fed. Rep. of Germany, and Menachem El-Roy, Haifa, Israel, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Jan. 15, 1980, Ser. No. 112,227
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1979, 2901405
Int. Cl.³ C08G *8/10, 8/20, 8/22, 10/02*
U.S. Cl. 528—138 **9 Claims**

1. A process for making self-curing or curable materials from coal hydrogenation distillation residues, the said process comprising

subjecting the residue of an extractive coal hydrogenation which has a softening point of 30° to 54° C., in a first stage to condensation with a mono- or dihydroxybenzene and/or a methylhydroxybenzene and/or an ethylene substituted benzene, the reactants being present at a ratio of the residue to benzene derivative between 1:1 and 2:1 and the reaction being carried out in the presence of acid at a pH of 1 to 2 and at a temperature of 90° to 100° C. whereupon, in a second stage, the condensation product of the first stage is reacted at about the same temperature range with an aldehyde whereby a novolak-type resin is obtained.

4,259,474

SULFUR-CONTAINING POLYOXYALKYLENES

Paritosh M. Chakrabarti, Wayne; Lindley S. Wood, Montclair, and David J. Tracy, Lincoln Park, all of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Sep. 25, 1979, Ser. No. 78,708
The portion of the term of this patent subsequent to Mar. 10, 1998, has been disclaimed.
Int. Cl.³ C08G *75/14*
U.S. Cl. 528—388 **21 Claims**

1. A sulfur-containing polyoxyalkylene product having the formula:

$$WS-[(AO)_x-(BO)_y-(CO)_z]_n-DE$$

wherein E is halogen or —SW; W is hydrogen, phenyl, alkyl of 1 to 4 carbon atoms, an alkali metal or ammonium ion, or a heterocyclic radical containing 2 to 4 hetero atoms in a 5- or 6-membered ring which is monocyclic or may be fused to an aromatic ring; A, C and D represent lower alkylene of 2 to 4 carbon atoms; B is alkylene of 2 to 8 carbon atoms; y and z are each integers having a value of from 0 to 50, x is an integer having a value of from 2 to 50; n is an integer having a value of from 1 to 30.

11. The process which comprises reacting, at elevated temperature and from about 10 to about 50 psi pressure, in the liquid phase in the presence of an inert solvent, a sulfur-containing compound selected from the group of an alkali metal salt or an ammonium salt of an alkyl mercaptan of 1 to 4 carbon atoms or of phenyl mercaptan; ammonium thiol; an alkali metal thiol; a heterocyclic mercaptan containing from 2 to 4 hetero atoms in a 5- or 6-membered ring which is monocyclic or may be fused to a phenyl or a naphthyl ring; and the sulfide of an alkali metal or ammonium, with at least one polymeric compound having the formula:

$$halo-[(AO)_x-(BO)_y-(CO)_z]_n-D\text{-}halo$$

wherein halo is an iodine, chlorine or bromine atom; A, C and D represent lower alkylene of 2 to 4 carbon atoms; B is alkylene of 2 to 8 carbon atoms; y and z each represent integers having a value from 0 to 50 and x represents an integer having a value of from 2 to 50; n is 1 to 30; to produce the product of claim **1**.

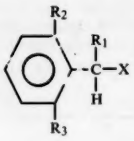
4,259,475

PREPARATION OF LINEAR CRYSTALLINE HOMOPOLYBENZYL

Burnett H. Johnson, Baytown, Tex.; John E. Chandler, Stamford, Conn., and Robert W. Lenz, Amherst, Mass., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 29, 1979, Ser. No. 25,180
Int. Cl.³ C08G *61/02*
U.S. Cl. 528—397 **12 Claims**

1. A process for preparing a linear crystalline homopolybenzyl which comprises polymerizing an α-alkylbenzyl halide represented by the structural formula:



wherein R_1 is a C_1–C_4 alkyl group, R_2 and R_3 can be the same or different and are each selected from the group consisting of hydrogen and alkyl groups having from 1 to 4 carbon atoms and X is halogen in the presence of a Friedel-Crafts catalyst complexed with a complexing agent represented by the formula RNO_2 wherein R is selected from the group consisting of alkyl groups having from 1 to 6 carbon atoms, cycloalkyl groups having from 1 to 6 carbons, aryl groups, alkaryl groups, haloaryl groups, haloalkaryl groups wherein the halogen is substituted on the aryl ring and aryl arylene ethers wherein the aryl, alkaryl, haloaryl, haloalkaryl and aryl arylene ethers have from 1 to 13 carbon atoms, at a temperature in the range of about −65° C. to about −40° C. in a halogenated hydrocarbon solvent.

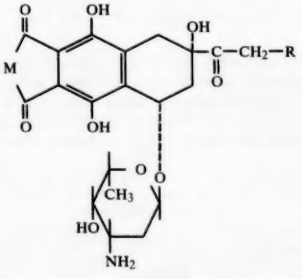
4,259,476

NOVEL HETEROCYCLIC ANTHRACYCLINE COMPOUNDS

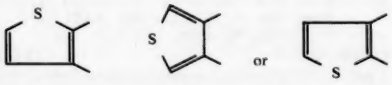
Andrew S. Kende, 19 Larchwood Dr., Pittsford, N.Y. 14534, and Howard Newman, 11 Kuperman La., Monsey, N.Y. 10952

Filed Apr. 2, 1979, Ser. No. 26,392
Int. Cl.³ C07H *17/00, 17/02, 17/04*
U.S. Cl. 536—17 A **8 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein R is hydrogen or hydroxy and M is a divalent moiety of the formulae:



and the hydrochloride salts thereof.

4,259,477

PROCESS FOR MAKING CELLULASE-FREE XANTHAN GUM

Kang, Kenneth S., Lajolla, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 4, 1979, Ser. No. 45,151
Int. Cl.³ C08B *37/00*
U.S. Cl. 536—114 **4 Claims**

1. A process for producing cellulase-free xanthan gum which comprises:

a. reacting xanthan gum beer at a pH of about 6.0 to about 7.0 with an alkali metal hypochlorite, and

b. heating the product of step a at 85°–95° C. for 2–10 minutes.

4,259,478

PROCESS FOR PREPARING HIGH MOLECULAR WEIGHT COPOLYESTERS

Winston J. Jackson, Jr., and Herbert F. Kuhfuss, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 14, 1979, Ser. No. 103,805
Int. Cl.³ C08G *63/18*
U.S. Cl. 528—307 **10 Claims**

1. Process for preparing linear, high molecular weight copolyesters from polymers selected from the group consisting of (A) polyesters or copolyesters, the acid component of which consists of at least 70 mole percent terephthalic acid and the diol component of which consists of at least 70 mole percent ethylene glycol and (B) copolyesters, the acid component of which consists of at least 70 mole percent terephthalic acid and the diol component of which consists of at least 70 mole percent of a mixture of ethylene glycol and 1,4-cyclohexanedimethanol in a mole ratio of from 20:80 to 97:3, said process comprising

(a) heating said polymer to a temperature of from about 200° C. to about 290° C. in the presence of about 3 mole percent to an amount equivalent to the mole percent of ethylene glycol of 1,4-cyclohexanedimethanol to thereby glycolize said polymer,

(b) distilling out at least a portion of the ethylene glycol from the glycolysis mixture, and

(c) polycondensing the glycolysis mixture to form a copolyester of which at least a portion of ethylene glycol units are replaced by 1,4-cyclohexanedimethanol units and the inherent viscosity is at least 0.4.

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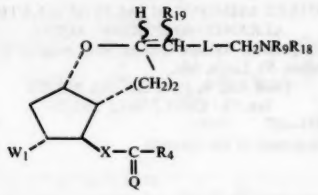
2-DECARBOXY-2-AMINOMETHYL-4-HALO-5,9-EPOXY-9-DEOXY-PGF$_1$ COMPOUNDS

Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 932,981, Aug. 11, 1978, which is a division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Sep. 7, 1979, Ser. No. 73,454
Int. Cl.³ C07D *307/93*
U.S. Cl. 542—426 **4 Claims**

1. A compound of the formula



wherein W_1 is α-OH:β-H, α-H:β-OH, oxo, methylene, α-H:β-H, α-Ch_2OH:β-H;
wherein L is
$-(CH_2)_d-C(R_2)_2-$,
wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro,
wherein Q is oxo, α—H:β-H, α—OH:β-R_8 or α—R_8:β—OH
wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,
wherein R_9 is hydrogen, methyl, or ethyl, and wherein R_{18} is hydrogen, alkyl of one to 4 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with alkyl of one to 4 carbon atoms, inclusive;
wherein R_4 is
(1) $-CR_5R_6-C_gH_{2g}-CH_3$
(2) $-CR_5R_6-Z-(Ph)$
(3) cis—CH_2—CH=CH—CH_2CH_3
wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $-CR_5R_6-$ and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6—and the (Ph); wherein (Ph) is phenyl or phenyl substituted by (T)s, wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $-OR_7-$, wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different;
wherein R_{19} is chloro, bromo, or iodo; and wherein X is
(1) trans—CH=CH—
(2) cis—CH=CH—
(3) —C≡C— or
(4) $-CH_2CH_2-$.

4,259,480

4 HALO-5,9-EPOXY-9-DEOXY-PGF$_1$, AMIDES

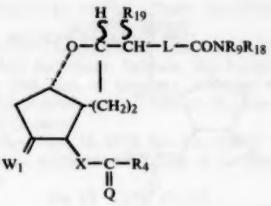
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 932,981, Aug. 11, 1978, which is a division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Sep. 7, 1979, Ser. No. 73,455

Int. Cl.[3] **C07D** *307/93*

U.S. Cl. 542—426 **4 Claims**

1. A compound of the formula



wherein W_1 is α—OH:β—H, α—H:β—OH, oxo, methylene, α—H:β—H, α—CH_2OH:β—H;
wherein L is $-(CH_2)_d-C(R_2)_2-$,
wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other if fluoro,
wherein Q is oxo, α—H:β—H, α—OH:β—R_8 or α—R_8-:β—OH
wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,
wherein R_9 is hydrogen, methyl, or ethyl, and wherein R_{18} is hydrogen, alkyl of one to 4 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with alkyl of one to 4 carbon atoms, inclusive;
wherein R_4 is
(1) $-CR_5R_6-C_gH_{2g}-CH_3$
(2) $-CR_5R_6-Z-(Ph)$
(3) cis—CH_2—CH=CH—CH_2CH_3
wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $-CR_5R_6-$ and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—0—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6— and the (Ph); wherein (Ph) is phenyl or phenyl substituted by (T)s, wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $-OR_7-$, wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different;
wherein R_{19} is chloro, bromo, or iodo; and
wherein X is
(1) trans—CH=CH—
(2) cis—CH=CH—
(3) —C≡C— or
(4) $-CH_2CH_2-$.

4,259,481

2-DECARBOXY-2-HYDROXYMETHYL-4-HALO-5,9-EPOXY-9-DEOXY-PGF$_1$ COMPOUNDS

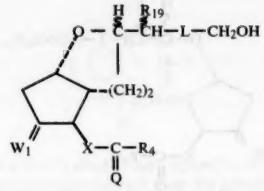
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 932,981, Aug. 11, 1978, which is a division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Sep. 7, 1979, Ser. No. 73,453

Int. Cl.[3] **C07D** *307/93*

U.S. Cl. 542—426 **4 Claims**

1. A compound of the formula



wherein W_1 is α-OH:β-H, α-H:β-OH, oxo, methylene, α-H:β-H, -CH_2OH:β-H; wherein L is

—$(CH_2)_d$—$C(R_2)_2$—,

wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, wherein Q is oxo, α-H:β-H, α-OH:β-R_8 or α-R_8:β-OH wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive, wherein R_4 is

(1) —CR_5R_6—C_gH_{2g}—CH_3

(2) —CR_5R_6—Z—(Ph)

(3) cis-CH_2—CH=CH—CH_2CH_3

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between —CR_5R_6— and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—0—); wherein Z represents an oxa atom (—0—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6 and the (Ph); wherein (Ph) is phenyl or phenyl substituted by (T)s, wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_7—, wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different; wherein R_{19} is chloro, bromo, or iodo; and wherein X is

(1) trans-CH=CH—

(2) cis-CH=CH—

(3) —C≡C— or

(4) —CH_2CH_2—.

4,259,482

THIADIAZINE COMPOUND

William L. Matier, and William T. Comer, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Division of Ser. No. 949,332, Oct. 6, 1978, Pat. No. 4,206,142, which is a division of Ser. No. 894,889, Apr. 10, 1978, Pat. No. 4,130,663, which is a division of Ser. No. 825,996, Aug. 19, 1977, Pat. No. 4,096,183, which is a division of Ser. No. 601,563, Aug. 4, 1975, Pat. No. 4,052,455, which is a continuation-in-part of Ser. No. 459,152, Apr. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 368,547, Jun. 11, 1973, abandoned. This application Dec. 17, 1979, Ser. No. 103,989 The portion of the term of this patent subsequent to Dec. 17, 1991, has been disclaimed.

Int. Cl.[3] **C07D** *285/16*

U.S. Cl. 544—8 **1 Claim**

1. A compound 5,6-dihydro-4-methyl-5-(4-nitrophenyl)-3-phenyl-4H-1,2,4-thiadiazine 1,1-dioxide.

4,259,483

QUATERNARY AMMONIUM SALTS OF α-1,4-THIAZINE ALKANEPHOSPHONIC ACIDS

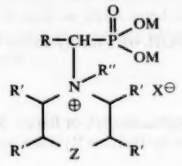
Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Aug. 9, 1978, Ser. No. 932,258

Int. Cl.[3] **C07D** *279/12, 295/08*

U.S. Cl. 544—57 **8 Claims**

1. A compound of the formula



where R and R'' are members selected from the group consisting of alkyl, alkenyl, cycloalkyl, aryl, alkaryl, aralkyl, and hydroxyphenyl and from the group consisting of alkyl, aralkyl, cycloalkyl, alkenyl and alkynyl, respectively, R' is hydrogen or alkyl, Z is S, SO, SO_2, M is hydrogen or a salt moiety and X is halide, acetate, sulfonate or arylsulfonate.

4,259,484

BIS-SUBSTITUTED SUCCINAMIDES AND THEIR UTILITY AS HERBICIDES

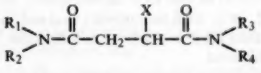
Francis H. Walker, Mill Valley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 960,379, Nov. 13, 1978, abandoned, which is a division of Ser. No. 821,688, Aug. 4, 1977, Pat. No. 4,143,070, which is a division of Ser. No. 546,234, Feb. 3, 1975, Pat. No. 4,056,524, which is a continuation-in-part of Ser. No. 459,438, Apr. 9, 1974, abandoned, which is a continuation-in-part of Ser. No. 410,641, Nov. 12, 1973, abandoned. This application Nov. 13, 1979, Ser. No. 93,358

Int. Cl.[3] **C07D** *413/06, 401/06, 403/06*

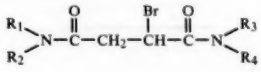
U.S. Cl. 544—87 **5 Claims**

1. A compound in which the formula is



in which X is chlorine or bromine; and in which each R_1 and R_2 taken together and R_3 and R_4 taken together is an alkenylene having 4 or 5 carbon atoms, inclusive.

5. A compound having the formula



R_1 and R_2 taken together are β-oxydiethylene and R_3 and R_4 taken together are β-oxydiethylene.

4,259,485

CRYSTALLIZATION PROCESS

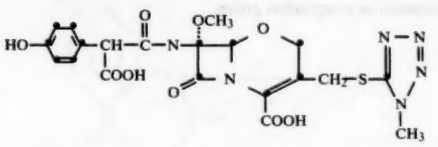
William J. Wheeler, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 24, 1979, Ser. No. 32,840

Int. Cl.[3] **C07D** *413/02*

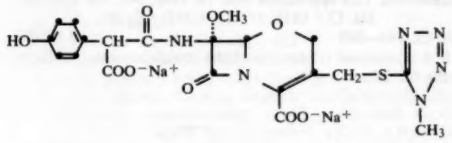
U.S. Cl. 544—90 **4 Claims**

1. The D-sesquisodium salt of the oxa-β-lactam diacid of the formula

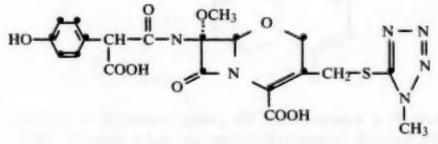


substantially free of the L form.

3. The process for preparing the D-sesquisodium salt of claim 1 which comprises (1) adding acetone to a water solution containing the D,L-disodium salt of the formula



and the D,L-diacid of the formula



in a molar ratio of the disalt to the diacid of between about 1 to 1 to about 6 to 1, and (2) cooling the solution to a temperature between about −35° C. and about −10° C.

4,259,486

METHOD FOR THE AMINOALKYLATION OF PHENOL

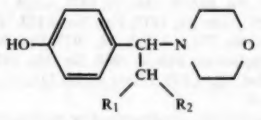
Tatao Luo, Hamilton Square, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 4, 1980, Ser. No. 118,275

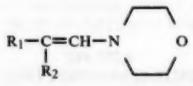
Int. Cl.³ C07D *295/08*

U.S. Cl. 544—173 **3 Claims**

1. A method for the preparation of a compound of formula



wherein R_1 and R_2 are hydrogen or C_1–C_2 alkyl, straight chain or branched, comprising: reacting a compound of formula



wherein R_1 and R_2 are as hereinabove defined with phenol used is 10–20% excess over theory in the presence of a solvent selected from isopropyl alcohol, acetonitrile and toluene and in the presence of lithium chloride added in molar amounts equal to that of the phenol used, and in the temperature range of 20° C. to 90° C. for a period of time sufficient to essentially complete the reaction.

4,259,487

PROCESS FOR THE PRODUCTION OF OPTIONALLY SUBSTITUTED 2-MERCAPTO-4,6-DI-CHLORO-S-TRIAZINES

Klaus Hentschel, Kalmthout, Belgium, and Friedrich Bittner, Bad Soden, Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Nov. 15, 1979, Ser. No. 94,802

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1978, 2850332

Int. Cl.³ C07D *251/38*

U.S. Cl. 544—218 **15 Claims**

15. A process for the production of a 2-mercapto-4,6-dichloro-s-triazine or a substituted 2-mercapto-4,6-dichloro-s-triazine by reacting a mercaptan or mercaptide with cyanuric chloride in the presence of an acid binding agent comprising spraying cyanuric chloride downwardly and outwardly at a temperature in its molten range from the upper portion of a vertical tubular zone closed at the top thereof to contact and mix with the mercaptan or mercaptide and components which form a liquid layer defining said tubular zone, constricting said layer in breast-shaped manner downwardly below the place of entry of the cyanuric chloride into the tubular zone to form a narrower discharge opening, discharging said mercaptan or mercaptide and other components as a spray tengentially to said layer and directed slightly upwardly in the direction of the closed top above said constriction and below the point of introduction of the cyanuric chloride and thereby forming said liquid layer along the entire tubular zone to the point of introduction of the cyanuric chloride, whereby the thickness of said layer where it is formed into a breast-shaped constriction is greater than it is in the remainder of the tubular zone.

4,259,488

BIS-ISOINDOLINE PIGMENTS

Jost von der Crone, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

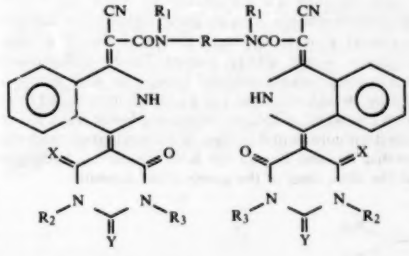
Filed Jun. 7, 1979, Ser. No. 46,289

Claims priority, application Switzerland, Jun. 19, 1978, 6645/78

Int. Cl.³ C09B *57/04*

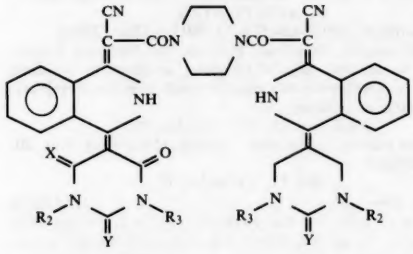
U.S. Cl. 544—296 **4 Claims**

1. An isoindoline pigment of the formula (I)



(I)

or of a formula (II)



(II)

or a tautomer thereof, wherein R represents alkylene of 2 to 6 carbon atoms, unsubstituted phenylene, monomethylphenylene, dimethylphenylene, or alkylene phenylene of 7 to 20 carbon atoms; R_1 represents hydrogen or alkyl of 1 to 4 carbon atoms; R_2 and R_3 independently represent hydrogen, alkyl of 1 to 4 carbon atoms, phenyl or phenyl substituted with methyl or halogen; X represents oxygen or NH; and Y represent oxygen, sulfur or NH.

4,259,489

2,3-DICYANOPYRAZINES

Tetsuo Takematsu, Utsunomiya; Hirozo Segawa, Nakajyo; Takamaro Miura, Nakajyo; Toshiei Ataka, Nakajyo; Michio Chatani, Nakajyo, and Akira Nakamura, Nakajyo, all of Japan, assignors to Kyowa Gas Chemical Industry Co. Ltd., Tokyo, Japan

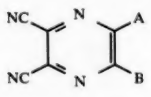
Filed Dec. 15, 1978, Ser. No. 969,938

Claims priority, application Japan, Dec. 22, 1977, 52-154908; Jan. 20, 1978, 53-4245; Jan. 20, 1978, 53-4246; Jul. 26, 1978, 53-90343; Sep. 28, 1978, 53-118614

Int. Cl.[3] C07D *241/06;* A01N *43/60*

U.S. Cl. 544—336 **7 Claims**

1. A 2,3-dicyanopyrazine derivative of the general formula



(I)

wherein A represents a phenyl group which may contain 1 to 3 substituents selected from the group consisting of halogen atoms, lower alkyl groups, lower alkoxy groups and nitro groups; and B represents a group of the formula

in which R_{21} and R_{31}, independently from each other, represent a hydrogen atom, a lower alkyl group which may have 1 or 2 substituents selected from the group consisting of halogen atoms, phenyl groups, hydroxyl groups, carboxyl groups, cyano groups, lower alkoxy groups, lower dialkylamino groups and lower alkoxycarbonyl groups, an allyl group, a phenyl group which may have 1 or 2 substituents selected from the group consisting of halogen atoms and lower alkyl, lower alkoxy and trifluoromethyl groups, or a benzyl group, with the proviso that R_{21} and R_{31} do not both represent a hydrogen atom at the same time, or the group of the formula

is an ethylenimino, pyrrolidino, piperidino, hexamethylenimino or morpholino group.

4,259,490

2-(SUBSTITUTED AMINO)BENZ[CD]INDOLES

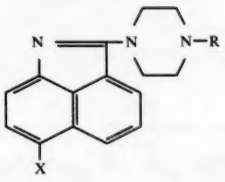
Andrew S. Tomcufcik, Old Tappan, and Raymond G. Wilkinson, Montvale, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 91,086, Nov. 23, 1979, abandoned. This application Jun. 23, 1980, Ser. No. 161,709

Int. Cl.[3] A61K *31/495;* C07D *403/04*

U.S. Cl. 544—369 **6 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein R is selected from the group consisting of methyl, benzyl, benzoyl, 3-dimethylaminopropyl and 2-thiazolyl and X is selected from the group consisting of hydrogen, chloro and bromo; and the pharmaceutically acceptable acid-addition salts thereof

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4,259,491

SMOKE RETARDANT VINYL CHLORIDE AND VINYLIDENE CHLORIDE POLYMER COMPOSITIONS WITH AMINE MOLYBDATES

William J. Kroenke, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 22,670, Mar. 22, 1979, which is a division of Ser. No. 792,293, Apr. 29, 1977, Pat. No. 4,153,729, which is a division of Ser. No. 770,168, Feb. 14, 1977, Pat. No. 4,053,455. This application Feb. 4, 1980, Ser. No. 118,169

Int. Cl.[3] C07F *11/00;* C07D *215/10*

U.S. Cl. 546—8 **1 Claim**

1. 2,2,4-trimethyl decahydroquinoline molybdate.

4,259,492

DIOXAPHOSPHEPINES

Michael Rasberger, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

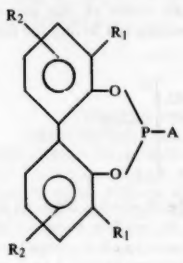
Filed May 18, 1979, Ser. No. 39,701

Claims priority, application Switzerland, May 18, 1978, 5390/78

Int. Cl.[3] C07F *9/24*

U.S. Cl. 546—21 **18 Claims**

1. A compound of the formula I



(I)

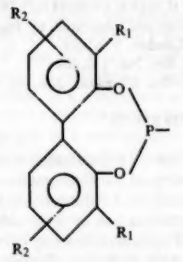
wherein

R_1 is C_1–C_{18} alkyl,

R_2 is hydrogen or C_1–C_{18} alkyl, and

A is a group —N(R_3)R_4 (III), wherein

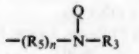
R_3 is hydrogen, C_1–C_{22} alkyl, C_2–C_{21} oxa- or thiaalkyl, C_3–C_{18} alkenyl, C_3–C_{18} alkynyl, C_2–C_6 hydroxyalkyl, C_3–C_{24} alkoxycarbonylalkyl, C_5–C_{12} cycloalkyl, C_6–C_{14} aryl, C_7–C_{15} alkaryl, C_7–C_{15} aralkyl, a C_5–C_{17} piperidin-4-yl group or said group substituted by up to five methyl or ethyl groups; or a group of the formula II



(II)

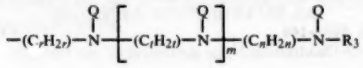
in which R_1 and R_2 have the meanings given above,

R_4 is C_1–C_{22} alkyl, C_2–C_{21} oxa- or thiaalkyl, C_3–C_{18} alkenyl, C_3–C_{18} alkynyl, C_2–C_6 hydroxyalkyl, C_3–C_{24} alkoxycarbonylalkyl, C_5–C_{12} cycloalkyl, C_6–C_{14} aryl, C_7–C_{15} alkaryl, C_7–C_{15} aralkyl, a C_5–C_{17} piperidin-4-yl group or said group substituted by up to five methyl or ethyl groups; a group of the formula IV



(IV)

or



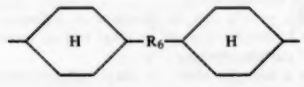
(V)

wherein

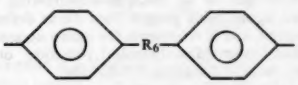
R_3 has the meaning given above,

n is 0 to 1,

R_5 is C_2–C_{22} alkylene, C_4–C_{22} alkenylene, C_4–C_{22} alkynylene or C_5–C_9 cycloalkylene, each of which can be interrupted with one or two oxygen or sulfur atoms, or R_5 is a group of the formula VI



in which R_6 is —O—, —S— or —(R_7)C(R_8)—, wherein R_7 and R_8 independently of one another are hydrogen or C_1–C_8 alkyl, or R_7 and R_8 together with the C atom to which they are attached form C_5–C_{12} cycloalkyl, or R_7 and R_8 together are 1,4-cyclohexylenedimethylene or 1,3,3-trimethylcyclohexylene-1,5, or R_5 is also phenylene, biphenylene or a group of the formula



wherein R_6 has the meaning given above, and r, t and n independently of one another are 2, 3, 4, 5 or 6,

m is 0, 1, 2 or 3,

Q is a group of the formula II, wherein R_1 and R_2 have the meanings given above, or

R_3 and R_4 together with the N atom to which they are attached form a pyrrolidine, oxazolidine, piperidine or morpholine ring; or said pyrrolidine, said oxazolidine, said piperidine or said morpholine substituted by up to five methyl or ethyl groups; or R_3 and R_4 together form the radical —CH_2—CH_2—N(Q)—CH_2—CH_2— wherein Q has the meaning given above.

4,259,493

PERHALOMETHYLCARBINOL-SUBSTITUTED PHENOL AND NAPHTHOL SULFAMPHTHALEINS

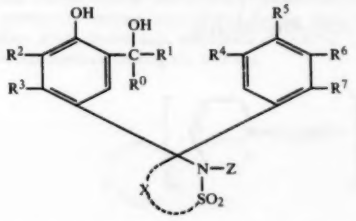
James W. Foley, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 2, 1978, Ser. No. 957,163

Int. Cl.[3] **C07D** *455/02, 275/06, 279/02, 417/10*

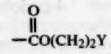
U.S. Cl. 546—96 **14 Claims**

1. A compound of the formula



wherein R^0 is perhalomethyl selected from trifluoromethyl, difluoromethyl, difluorochloromethyl, dichlorofluoromethyl, dichloromethyl and trichloromethyl; R^1 is selected from hydrogen and perhalomethyl having the same meaning given above; R^2 is hydrogen or methyl; R^3 is hydrogen, alkyl or alkoxy; R^2 and R^3 taken together represent the carbon atoms necessary to complete a fused benzene ring; R^4 and R^6 each are selected from hydrogen, alkyl, alkoxy, chloro and fluoro; R^7 is hydrogen, hydroxy, alkyl or alkoxy; R^6 and R^7 taken together represent the carbon atoms necessary to complete a fused benzene ring provided R^2 and R^3 are taken separately when R^6 and R^7 are taken together; R^5 is selected from hydrogen, hydroxy, alkyl, alkoxy, —N,N—(dialkyl)amino, —N,N—(ω-R^8alkyl)$_2$amino wherein R^8 is hydroxy or halo; —$NHCOCH_3$, piperidino, pyrrolidino, N-methylpiperazino, morpholino, thiomorpholino or tetrahydro-2H,4H-1,3,6-dioxazocino; R^4, R^5 and R^6 taken together represent the atoms necessary to complete a fused [ij]quinolizidine ring; Z is a group selected from

wherein R is alkyl having 1 to 7 carbon atoms or phenyl and



wherein Y is hydrogen or an electron-withdrawing group having a positive sigma value greater than 0.6 as defined by Hammett's Equation; and X represents the atoms necessary to complete 2,3-dihydrobenz[d]isothiazole-1,1-dioxide or 2,3-dihydronaphtho[1,8-de]-1,2-thiazine-1,1-dioxide.

4,259,494

TRICYCLIC SULPHOXIMIDES

Peter Stoss, Wildtal; Gerhard Satzinger, Denzlingen, and Manfred Herrmann, St. Peter, all of Fed. Rep. of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

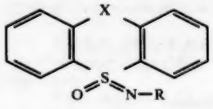
Division of Ser. No. 842,707, Oct. 17, 1977, abandoned, which is a continuation of Ser. No. 719,317, Aug. 31, 1976, Pat. No. 4,110,448, which is a division of Ser. No. 496,618, Aug. 12, 1974, Pat. No. 3,992,376. This application Oct. 11, 1979, Ser. No. 83,892

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1974, 2417063

Int. Cl.[3] **C07D** *411/12, 333/76*

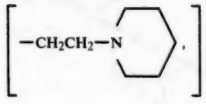
U.S. Cl. 546—202 **7 Claims**

1. A compound of the formula:



wherein X is a valence bond and wherein R is

$$-CH_2-CH_2-N(C_2H_5)_2,$$



and

$$-CH_2-CH_2-CH_2-N(CH_3)_2;$$

and the pharmaceutically acceptable acid addition salts thereof.

4. A compound selected from N-carbamoyl-dibenzothiophene-S-oximide, and N-(n-butylcarbamoyl)-dibenzothiophene-S-oximide, and the pharmaceutically acceptable acid addition salts thereof.

4,259,495

PROCESS FOR PRODUCING 2,3,5,6-TETRACHLOROPYRIDINE

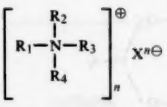
Claus D. Weis, Pfeffingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 10, 1979, Ser. No. 74,217

Int. Cl.[3] **C07D** *211/68*

U.S. Cl. 546—345 **9 Claims**

1. A process for producing 2,3,5,6 -tetrachloropyridine by dechlorination of pentachloropyridine, which process comprises reacting pentachloropyridine, in an alkanephosphonic acid dialkyl ester having 1 to 4 carbon atoms in each of the alkyl groups or in a phosphoric acid trialkyl ester having 1 to 4 carbon atoms in each of the alkyl groups as the solvent, at 60° to 120° C., in the presence of 1.4 to 2.8 mols, per mol of pentachloropyridine, of an ammonium salt of an inorganic or organic acid, with 1.2 to 1.6 gram atoms of zinc per mol of pentrachoropyridine, said ammonium salt having the formula



in which R_1, R_2, R_3 and R_4 can be identical or different and are each hydrogen, alkyl having 1 to 4 carbon atoms, or phenyl which can be substituted by halogen, by alkyl groups have 1 to 4 carbon atoms or by alkoxy groups having 1 to 4 carbon atoms, X is an anion from the group: chloride, bromide, sulfate, hydrogen sulfate, phosphate, hydrogen phosphate, dihydrogen phosphate, carbonate, hydrogen carbonate, acetate, propionate, butyrate, isobutyrate, oxalate, benzoate, alkanephosphonate having 1 to 4 carbon atoms in the alkyl group and alkane- or benzene sulfonate having 1 to 4 carbon atoms in the alkyl group, and n is 1 to 3 and corresponds to the number of negative charges of the respective anion X.

4,259,496

HALOGENATION OF PYRIDINE COMPOUNDS

Graham Whittaker, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jan. 16, 1980, Ser. No. 112,609

Claims priority, application United Kingdom, Jan. 29, 1979, 03018/79

Int. Cl.[3] **C07D** *213/26*

U.S. Cl. 546—345 **2 Claims**

1. A process for the preparation of a fluorinated pyridine derivative from the group consisting of 3-trifluoromethylpyridine, 3-perchlorofluoromethylpyridines, 3-difluoromethylpyridine and derivatives thereof containing one or more chlorine or fluorine atoms as substituent(s) in the pyridine ring comprising reacting 3-methylpyridine with hydrogen fluoride and chlorine in the liquid phase at an elevated temperature in the range of 50° C. to 300° C. and superatmospheric pressure in the presence of chlorine, the proportion of hydrogen fluoride employed being at least 3 moles per mole of 3-methylpyridine and the proportion of chlorine being at least 3 moles per mole of 3-methylpyridine.

4,259,497

OXADIAZOLINE-1,3,4 ONE-5S

Michel Sauli, Paris, France, assignor to Philagro, Lyons, France

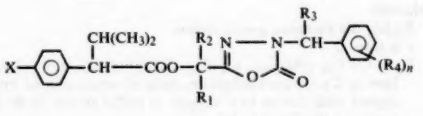
Filed Sep. 11, 1979, Ser. No. 74,307

Claims priority, application France, Sep. 12, 1978, 78 27001

Int. Cl.[3] **C07D** *271/10;* **A01N** *43/82*

U.S. Cl. 548—144 **5 Claims**

1. 1,3,4-Oxadiazolin-5-one derivative of the formula:



in which

X represents a halogen atom,

R_1, R_2 and R_3, which may be identical or different, each represent a hydrogen atom or an alkyl radical containing from 1 to 3 carbon atoms;

R_4 represents a halogen atom, an alkyl radical containing from 1 to 3 carbon atoms or an alkoxy radical containing from 1 to 3 carbon atoms, and

n represents an integer which is 0, 1, 2, 3 or 4, with the

proviso that if n is 2, 3 or 4, the substituents R_4 are identical or different.

4,259,498

PROCESS FOR PREPARING BENZISOTHIAZOLE-1,1-DIOXIDE AND NAPHTHO-1,2-THIAZINE-1,1-DIOXIDE COMPOUNDS

Stanley M. Bloom, Waban; Alan L. Borror, Lexington, and James W. Foley, Andover, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 836,004, Sep. 23, 1977, Pat. No. 4,191,689. This application Oct. 12, 1979, Ser. No. 84,251

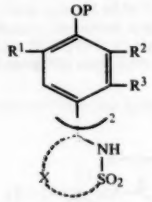
Int. Cl.³ C07D *275/04*

U.S. Cl. 548—207 **18 Claims**

1. A process which comprises reacting (a) at least 2 molar equivalents of a compound having the formula

acyl (—CR* wherein R* has the meaning given above);

wherein G is Li, MgCl, MgBr or MgI; P is a protecting group selected from 2'-tetrahydropyranyl, methoxymethyl and dimethyl-t-butylsilyl; R^1 and R^2 each are selected from hydrogen, alkyl, alkoxy, chloro and fluoro; R^3 is hydrogen, alkyl, alkoxy, or —OP wherein P has the same meaning given above; and R^2 and R^3 taken together represent the carbon atoms necessary to complete a fused benzene ring and (b) 1 molar equivalent of a compound selected from 3-chlorobenz[d]isothiazole-1,1-dioxide and 3-chloronaphtho-[1,8-de]-1,2-thiazine-1,1-dioxide in a suitable inert organic solvent to give (c) the compound having the formula



wherein P, R^1, R^2 and R^3 have the same meaning given above and X represents the atoms necessary to complete 2,3-dihydrobenz[d]isothiazole-1,1-dioxide or 2,3-dihydro-naphtho[1,8-de]-1,2-thiazine-1,1-dioxide, said reaction being conducted at a temperature below about 0° C. when said G is Li and being conducted at a temperature of above about 0° C. when said G is MgCl, MgBr or MgI.

4,259,499

METHOD FOR PREPARING 2-SULFOCHLORIDE BENZOATES AND THE USE OF SAME IN THE PREPARATION OF SACCHARIN

Carmine A. DiPippo, Longmeadow, Mass., assignor to James River Graphics Inc., South Hadley, Mass.

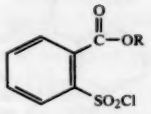
Continuation of Ser. No. 760,382, Jan. 18, 1977, abandoned, which is a division of Ser. No. 620,281, Oct. 7, 1975, Pat. No. 4,042,600, which is a continuation of Ser. No. 298,226, Oct. 17, 1972, abandoned. This application Apr. 24, 1978, Ser. No. 899,498

Int. Cl.³ C07D *275/06*

U.S. Cl. 548—211 **7 Claims**

1. A method for the synthesis of saccharin which comprises:

(a) pyrolyzing a 2-sulfochloride benzoate having the formula

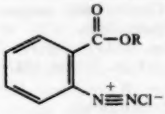


wherein R is selected from the group consisting of lower alkyl having 1 to 8 carbon atoms, lower cycloalkyl having 1 to 8 carbon atoms, aryl having from 6 to 10 carbon atoms, aralkyl, with the alkyl and aryl components thereof as previously defined, and alkenyl having from 2 to 8 carbon atoms at a temperature in the range of from about 150° C. to about 400° C. to form o-sulfobenzoic anhydride; and

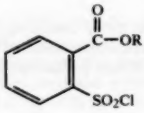
(b) subjecting said o-sulfobenzoic anhydride to ammonolysis whereby essentially pure saccharin is formed.

6. A method for the total synthesis of saccharin which comprises:

(a) reacting 2-diazonium chloride benzoate having the formula



wherein R is selected from the group consisting of lower alkyl having 1 to 8 carbon atoms, lower cycloalkyl having 1 to 8 carbon atoms, aryl having from 6 to 10 carbon atoms, aralkyl, with the alkyl and aryl components thereof as previously defined, and alkenyl having from 2 to 8 carbon atoms under such conditions as to form 2-sulfochloride benzoate having the formula



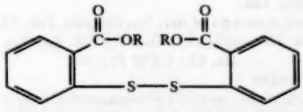
wherein R is as previously defined;

(b) pyrolyzing said 2-sulfochloride benzoate at a temperature in the range of from about 150° C. to about 400° C. to form o-sulfobenzoic anhydride; and

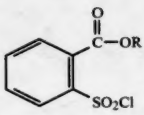
(c) subjecting said o-sulfobenzoic anhydride to ammonolysis whereby essentially pure saccharin is formed.

7. A method for the total synthesis of saccharin which comprises:

(a) reacting a dithiobenzoate having the formula



wherein R is selected from the group consisting of lower alkyl having 1 to 8 carbon atoms, lower cycloalkyl having 1 to 8 carbon atoms, aryl having from 6 to 10 carbon atoms, aralkyl, with the alkyl and aryl components thereof as previously defined, and alkenyl having from 2 to 8 carbon atoms with chlorine and water to form 2-sulfochloride benzoate having the formula



wherein R is as previously defined;

(b) pyrolyzing said 2-sulfochloride benzoate at a temperature in the range of from about 150° C. to about 400° C. to form o-sulfobenzoic anhydride; and

(c) subjecting said o-sulfochloride anhydride to ammonolysis whereby essentially pure saccharin is formed.

4,259,500

3-PERHALOALKYLHYDROXY-OXAZOLIDINES AND THIAZOLIDINES HERBICIDAL ANTIDOTES

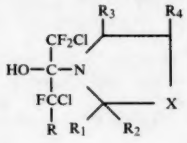
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 21, 1979, Ser. No. 77,889

Int. Cl.[3] **C07D** *263/04, 277/04;* **A01N** *43/76, 43/78*

U.S. Cl. 548—215 **7 Claims**

1. A compound of the formula



in which

R is selected from the group consisting of chloro and fluoro;

R_1–R_4 are each independently selected from the group consisting of hydrogen and 1–4 carbon alkyl; and

X is oxygen.

4,259,501

METHOD FOR PREPARING 3-AMINO-5-(T-BUTYL)ISOXAZOLE

Kenneth W. Burow, Jr., Indianapolis, and Richard F. Eizember, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 880,266, Feb. 22, 1978, abandoned. This application Dec. 7, 1978, Ser. No. 967,342

Int. Cl.[3] **C07D** *261/06*

U.S. Cl. 548—246 **13 Claims**

1. A method for preparing 3-amino-5-(t-butyl)-isoxazole, which comprises:

Step I, reacting an alkyl pivalate with acetonitrile in the presence of a base, to yield pivalyl acetonitrile, and

Step II, reacting pivalyl acetonitrile with hydroxylamine in a solvent at a temperature in the range of from about room temperature to about the reflux temperature of the reaction mixture at a pH range of from about pH 6.0 to about pH 7.0.

4,259,502

PROCESS FOR THE PREPARATION OF 5-MERCAPTO-1,2,3-TRIAZOLES

Hans-Rudolf Krüger, Berlin, Fed. Rep. of Germany, assignor to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

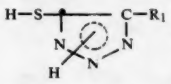
Division of Ser. No. 25,899, Apr. 2, 1979, Pat. No. 4,228,104. This application Nov. 21, 1979, Ser. No. 96,574

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1978, 2852067

Int. Cl.[3] **C07D** *249/04*

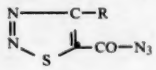
U.S. Cl. 548—255 **8 Claims**

1. A process for the preparation of 5-mercapto-1,2,3-triazoles of the general formula



I

wherein R_1 is hydrogen, a C_1–C_4 carbon residue or a substituted C_1–C_4 carbon residue, comprising reacting a compound of the formula

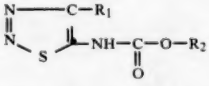


II

in a single step with an alcohol or phenol of the formula

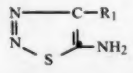
III

in an organic solvent to form a compound of the formula



IV

converting this compound through an acid or base catalyzed reaction to form a compound of the formula



V

rearranging this compound in the presence of base to form the product; and

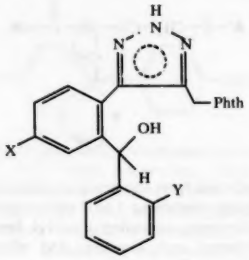
isolating the reaction product in conventional manner, wherein R_1 is hydrogen, methyl, ethyl, propyl, isopropyl, butyl, secbutyl, isobutyl, t-butyl, chloromethyl, methylthiomethyl or hydroxymethyl and R_2 is a C_1–C_4 alkyl residue, a substituted C_1–C_4 alkyl residue, a C_5–C_8 cycloalkyl residue, a substituted C_5–C_8 cycloalkyl residue, an aryl-C_1–C_3-alkyl residue, a substituted aryl-C_1–C_3-alkyl residue, an aromatic hydrocarbon residue, a substituted aromatic hydrocarbon residue substituted in one or more positions by one or more residues selected from the group consisting of C_1–C_6 alkyl, C_1–C_6 alkoxy, halogen, nitro and trifluoromethyl.

4,259,503
TRIAZOLE INTERMEDIATES FOR TRIAZOLOBENZAZEPINES

Rodney I. Fryer, North Caldwell; Eugene J. Trybulski, Parsippany, and Armin Walser, West Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 99,109, Nov. 30, 1979. This application Jul. 30, 1980, Ser. No. 173,583
Int. Cl.[3] C07D *403/06*
U.S. Cl. 548—255 **1 Claim**

1. A compound of the formula



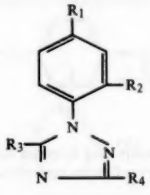
wherein X and Y are hydrogen or halogen.

4,259,504
SUBSTITUTED 1H-1,2,4-TRIAZOLES

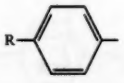
Stanley A. Lang, Jr., Stony Point; Yang-I Lin, Nanuet, and David N. Ridge, Grandview, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 27, 1979, Ser. No. 69,671
Int. Cl.[3] A61K *31/41, 31/44;* C07D *249/08, 401/04*
U.S. Cl. 548—262 **9 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein R_1 and R_2 are each individually selected from the group consisting of hydrogen, fluoro, chloro, bromo, nitro, amino and dimethylaminomethyleneamino; R_3 is selected from the group consisting of 3,4,5-trimethoxyphenyl and moieties of the formula:



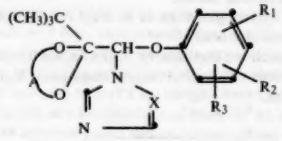
wherein R is hydrogen, fluoro, chloro, bromo, nitro, amino or dimethylaminomethyleneamino with the proviso that when R is hydrogen then R_1 and R_2 may not both be hydrogen; and R_4 is hydrogen or methyl; and the pharmaceutically acceptable acid addition salts thereof.

4,259,505
PROCESS FOR THE PREPARATION OF 1H-AZOLE DERIVATIVES

Elmar Sturm, Aesch, Switzerland; Wolfgang Eckhardt, Lörrach, Fed. Rep. of Germany; Bernhard Gloor, Pratteln, and Robert Nyfeler, Basle, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 4, 1980, Ser. No. 127,018
Int. Cl.[3] C07D *405/06*
U.S. Cl. 548—262 **14 Claims**

1. A process for the preparation of a compound of the formula I,

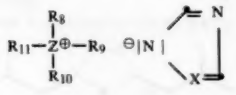


(I)

wherein

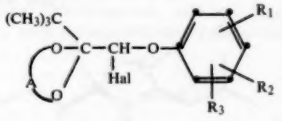
X represents —CH= or —N=;

R_1, R_2 and R_3 are each independently selected from the group consisting of hydrogen, halogen, lower alkyl, cyano, methoxy, phenyl and nitro; A represents —CH(R_4)—CH(R_5)— or —CH_2—C(R_6)(R_7)—CH_2—; R_4 and R_5 are each independently selected from the group consisting of hydrogen, C_1–C_6-alkyl, C_1–C_6-alkoxymethyl and phenoxymethyl or said substituents R_4 and R_5 form together a tetramethylene group; and R_6 and R_7 are independently selected from the group consisting of hydrogen or lower alkyl, which process comprises reacting a compound of formula III,



(III)

wherein X represents —CH= or —N=; Z represents nitrogen or phosphorus; R_8, R_9, R_{10} and R_{11} are the same or different and are each independently selected from the group consisting of C_1–C_{18}-alkyl, aralkyl, aryl and aryloxyalkyl at a temperature of from 30° to 110° C. with the compound of the formula II,



(II)

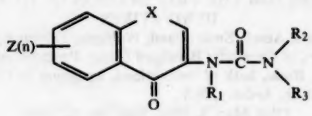
wherein A, R_1, R_2 and R_3 have the previously defined meanings and Hal represents halogen.

4,259,506
NEW 3-UREIDO-(THIO)-CHROMONE DERIVATIVES

Raymond Giraudon, Lesigny, France, assignor to Philagro, Lyons, France

Filed Dec. 7, 1978, Ser. No. 967,098
Claims priority, application France, Dec. 12, 1977, 77 38152
Int. Cl.[3] C07D *311/22, 335/06*
U.S. Cl. 549—23 **7 Claims**

1. A 3-ureido-(thio)-chromone derivative of the formula



in which:

X represents an oxygen or sulphur atom,

n is an integer which can be equal to 0 or 1,

Z represents a halogen atom or an alkyl radical containing from 1 to 6 carbon atoms,

R_1 represents a hydrogen atom or an alkyl radical containing 1 to 4 carbon atoms and

R_2 and R_3, which are identical or different, each represent a hydrogen atom or an alkyl radical containing from 1 to 4 carbon atoms.

4,259,507

3,5-DI-(2-METHYLPROPYL)-1,2,4-TRITHIOLANE AND USES THEREOF FOR AUGMENTING OR ENHANCING THE FLAVOR OR AROMA OF A FOODSTUFF

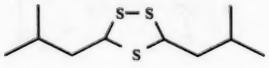
Chi-Kuen Shu, Cliffwood; Braja D. Mookherjee, Holmdel, and Manfred H. Vock, Locust, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 936,176, Nov. 24, 1978. This application Aug. 3, 1979, Ser. No. 63,377

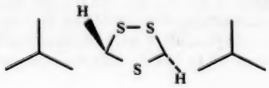
Int. Cl.³ C07D *341/00*

U.S. Cl. 549—34 **1 Claim**

1. The compound 3,5-di-(2-methylpropyl)-1,2,4-trithiolane or its "cis" or "trans" isomers having a structure selected from the group consisting of:

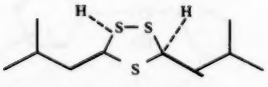


and



('trans' isomer)

and



('cis' isomer)

4,259,508

NEW DERIVATIVES OF CYSTEINE

Jean Blum, 20 ter.rue de Bezons, Courbevoie, France (92400)

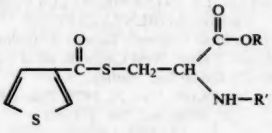
Continuation of Ser. No. 760,913, Jan. 21, 1977, abandoned. This application Nov. 3, 1978, Ser. No. 957,487

Claims priority, application France, Jan. 23, 1976, 76 01837

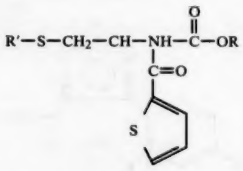
Int. Cl.³ C07D *333/24;* **A61K** *31/38*

U.S. Cl. 549—72 **4 Claims**

1. A compound selected from the group consisting of a compound having the formula:



and a compound having the formula:



wherein R is selected from the group consisting of hydrogen and an alkyl group containing 1 to 8 carbon atoms and R' is selected from the group consisting of acetyl, benzoyl, thienyl, 2-chromone-carbonyl and succinyl, and pharmaceutically acceptable salts thereof.

4,259,509

2-METHYL-2-PHENOXY-PROPIONIC ACID DERIVATIVES, PROCESS FOR THEIR PREPARATION AND THERAPEUTICAL APPLICATIONS THEREOF

Jacqueline Laforest, Vincennes; Jacqueline Bonnet, Vichy, and Pierre Bessin, Chilly-Mazarin, all of France, assignors to Albert Rolland S.A., Paris, France

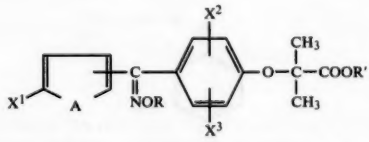
Filed Feb. 2, 1978, Ser. No. 874,479

Claims priority, application France, Feb. 14, 1977, 77 04110; Dec. 21, 1977, 77 38633

Int. Cl.³ C07D *307/52, 333/22*

U.S. Cl. 549—77 **5 Claims**

1. A compound selected from the group consisting of compounds of the formula:



(I)

which represents a compound selected from the isomer Z, the isomer E and mixture of both stereoisomers of the oximino group and in which:

A is selected from oxygen and sulfur,

X^1 is selected from halogen, hydrogen and methyl,

R is selected from hydrogen and C_{1-5} alkyl,

X^2 and X^3, which may be the same or different, are each selected from hydrogen, halogen and C_{1-5} alkyl,

R' is selected from hydrogen and C_{1-5} alkyl,

the group

is at a position selected from 2- and 3-position on the heterocycle,

the salts of the acids of the formula (I) with physiologically acceptable bases, and the compounds which are metabolically converted to compounds of the formula (I).

4,259,510

PREPARATION OF TRIFLUOROMETHYLPHENYL NITROPHENYLETHERS

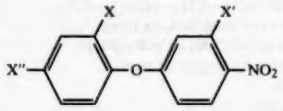
Wayne O. Johnson, Warminster, Pa., assignor to Rohm and Haas Company, Philadelphia, PA

Division of Ser. No. 71,341, May 1, 1979. This application May 19, 1980, Ser. No. 150,788

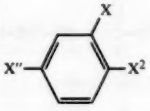
Int. Cl.[3] C07C *79/46;* A01N *37/40*

U.S. Cl. 560—21 12 Claims

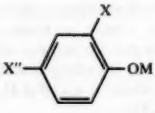
1. A process for preparing a compound of the formula



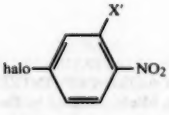
wherein X is hydrogen, halo, trifluoromethyl or lower alkyl; X′ is hydrogen, halo, cyano, lower alkyl, lower alkoxy, carboxy, carbalkoxy, carbalkoxyalkoxy, alkoxycarbalkoxy, carbalkenyloxy, carbamoyl, mono- and dialkylcarbamoyl or trifluoromethyl, and X″ is halo or trifluoromethyl with the proviso that when X″ is halo X is trifluoromethyl, which comprises treating a compound of the formula:



wherein X and X″ are as defined above and X^2 is fluoro or chloro with an alkali or alkaline earth metal hydroxide at a temperature in the range of from about 50° to about 100° C. for a period of time in the range from 5 hour to about 5.5 days in a solvent system comprising a dipolar, aprotic solvent having a dielectric constant in the range of from about 30 to about 70, said solvent being inert or substantially inert to said hydroxide, and a non-nucleophilic, hydroxylated cosolvent that increases the solubility of hydroxide to afford a trifluoromethylphenate of the formula



wherein X and X″ are is as defined above and M is an alkali metal or alkaline earth metal cation, which may be isolated upon acidification as the free phenol or reacted with a halonitrobenzene of the formula:



wherein X′ is as defined above and halo is fluoro or chloro in a dipolar, apiotic solvent at temperatures ranging from 20°–130° C. for halo being fluoro and from 50°–130° C. for halo being chloro for a period of from one hour to six days depending upon the nature of M, halo, X and X′.

4,259,511

PROCESS FOR SEPARATING SELENIUM, SELENIUM COMPOUNDS, SULFUR AND/OR SULFUR COMPOUNDS FROM POLYURETHANES CONTAINING THESE ELEMENTS AND/OR COMPOUNDS

Hans-Joachim Scholl, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 25, 1980, Ser. No. 115,577

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1979, 2904929

Int. Cl.[3] C07C *125/073*

U.S. Cl. 560—25 3 Claims

1. A process for separating selenium, selenium compounds, sulfur and/or sulfur compounds from urethanes containing these elements and/or compounds comprising: mixing said urethanes with an aqueous permanganate solution at a concentration of from 0.1 to 100% by weight, based on the amount of said urethanes, at a temperature of from 20° to 110° C., thereby forming an aqueous phase and an organic phase and recovering purified urethane from the organic phase.

4,259,512

METHOD OF SYNTHESIS FOR A CHEMICAL PRECURSOR TO STRIGOL

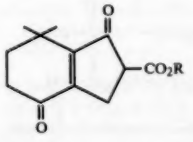
Lloyd J. Dolby, Eugene, Oreg., assignor to State Board of Higher Education for and on Behalf of the University of Oregon

Filed Oct. 15, 1976, Ser. No. 732,722

Int. Cl.[3] C07L *67/333*

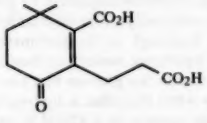
U.S. Cl. 560—119 4 Claims

4. A process for preparing the beta-keto ester having the formula

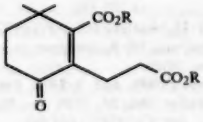


wherein R is an alkyl group, which comprises

condensing dimethylpyruvic acid and 5-oxo-6-heptenoic acid to yield a compound having the formula



esterifying said compound to yield another compound having the formula



and cyclizing said other compound to produce the beta-keto ester.

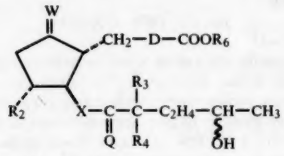
4,259,513

19-HYDROXY-13,14-DIHYDRO-PG$_1$ COMPOUNDS

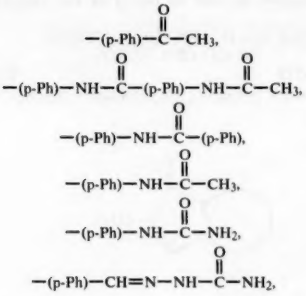
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,899, Apr. 2, 1979, Pat. No. 4,228,104.
This application Oct. 26, 1979, Ser. No. 88,441
Int. Cl.[3] C07C *177/00*
U.S. Cl. 560—121 1 Claim

1. A compound of the formula

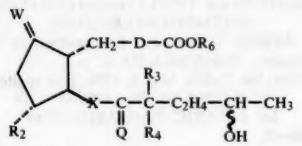


wherein D is -$(CH_2)_3$-CH_2-CF_2-,
wherein Q is α-OH:β-R_5 or α-R_5:β-OH,
wherein R_5 is hydrogen or methyl,
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;

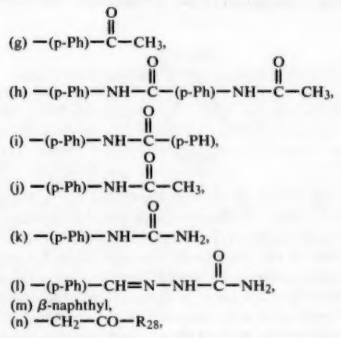


(g)
(h)
(i)
(j)
(k)
(l)

(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein -(p-Ph)- is para-henyl or inter-para-phenylene, and R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation; wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl; wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein W is oxo, methylene, α-OH:β-H, or α-H:β-OH; and
wherein X is —CH_2CH_2—.



wherein D is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
wherein g is zero, one, two, or three;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH,
wherein R_5 is hydrogen or methyl,
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;



(g)
(h)
(i)
(j)
(k)
(l)

(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene,
and R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation; wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl; wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein W is oxo, methylene, α-OH:β-H, or α-H:β-OH; and
wherein X is —CH_2CH_2—.

4,259,514

19-HYDROXY-13,14-DIHYDRO-PG$_2$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,899, Apr. 2, 1979, Pat. No. 4,228,104.
This application Oct. 26, 1979, Ser. No. 88,447
Int. Cl.[3] C07C *177/00*
U.S. Cl. 560—121 2 Claims

1. A compound of the formula

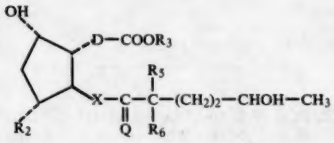
4,259,515

19-HYDROXY-6-OXO-PGF$_1$ INTERMEDIATES

John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,811, Jul. 5, 1979, Pat. No. 4,225,508.
This application Mar. 3, 1980, Ser. No. 126,484
Int. Cl.[3] C07C *177/00*
U.S. Cl. 560—121 1 Claim

1. A prostacyclin-type compound of the formula



wherein D is $-(CH_2)_2-CO-CH_2-L_2-$ or $-CH_2-CO-CH_2-L_3-$;
wherein L_2 is
(1) $-(CH_2)_j-$ *wherein j is one to* 4, inclusive,
(2) $-(CH_2)_q-CF_2-$ wherein q is one, 2, or 3, or
(3) $-CH=CH-$,
wherein L_3 is
(1) $-(CH_2)_n-$ wherein n is one to 5, inclusive,
(2) $-(CH_2)_p-CF_2-$ wherein p is 2, 3, or 4, or
(3) $-CH_2CH=CH-$,
wherein Q is oxo, α-H:β-H, α-OH:β-R_4, or α-R_4:β-OH,
wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive;
wherein R_3 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) $-(Ph)-CO-CH_3$,
(h) $-(p\text{-}Ph)-NH-CO-(p\text{-}Ph)-NH-CO-CH_3$,
(i) $-(p\text{-}Ph)-NH-CO-(p\text{-}Ph)$,
(j) $-(p\text{-}Ph)-NH-CO-CH_3$,
(k) $-(p\text{-}Ph)-NH-CO-NH_2$,
(l) $-(p\text{-}Ph)-CH=N-NH-CO-NH_2$,
(m) β-naphthyl,
(n) $-CH_2-CO-R_{16}$,
wherein —(Ph)— in inter-phenylene and —(p-Ph) is inter-paraphenylene or para-phenyl;
wherein R_{16} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl,
wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro, and
wherein X is
(1) trans-CH=CH—,
(2) cis-CH=CH—,
(3) —C≡C—, or
(4) $-CH_2CH_2-$,
and wherein ~ indicates attachment in alpha or beta configuration.

4,259,516

19-HYDROXY-INTER-OXA-13,14-DIHYDRO-PG$_1$ COMPOUNDS

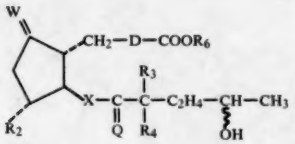
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,889, Apr. 2, 1979, Pat. No. 4,228,104. This application Oct. 26, 1979, Ser. No. 88,443

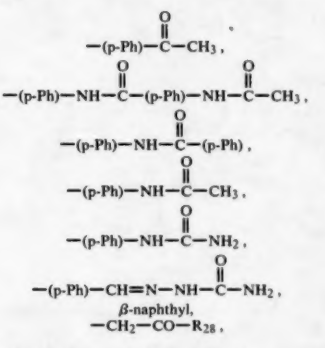
Int. Cl.^{3} C07C *177/00*

U.S. Cl. 560—121 **2 Claims**

1. A compound of the formula



wherein D is
(1) $-(CH_2)_3-O-CH_2-$,
(2) $-(CH_2)_2-O-(CH_2)_2-$, or
(3) $-CH_2-O-(CH_2)_3-$,
wherein Q is α-OH:β-R_5 or α-R_5:β-OH,
wherein R_5 is hydrogen or methyl,
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;



wherein (p-Ph) is para-phenyl or inter-para-phenylene, and R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation; wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl; wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein W is oxo, methylene, α-OH:β-H, or α-H:β-OH; and
wherein X is $-CH_2CH_2-$.

4,259,517

19-HYDROXY-TRANS-2,3-DIDEHYDRO-13,14-DIHYDRO-PG$_1$ COMPOUNDS

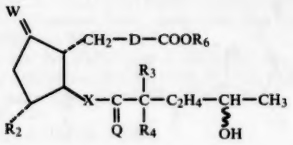
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,899, Apr. 2, 1979, Pat. No. 4,228,104. This application Oct. 26, 1979, Ser. No. 88,750

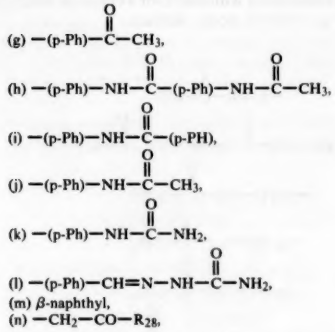
Int. Cl.^{3} C07C *177/00*

U.S. Cl. 560—121 **2 Claims**

1. A compound of the formula



wherein d is trans-$(CH_2)_3$-CH=CH-,
wherein Q is α-OH:β-R_5 or α-R_5:β-OH,
wherein R_5 is hydrogen or methyl,
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;



wherein -(p-Ph)- is para-phenyl or inter-para-phenylene, and R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein W is oxo, methylene, α-OH:β-H, or α-H:β-OH; and
wherein X is $-CH_2CH_2-$.

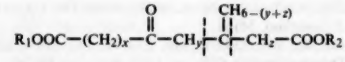
4,259,518

3-METHYL-5-KETO-α,ω-ALKENEDIOIC ACIDS AND ESTERS

Kurt Bauer, Holzminden, and Detlef Hagena, Hoexter, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 30, 1979, Ser. No. 71,431
Claims priority, application Fed. Rep. of Germany, May 26, 1979, 2921430
Int. Cl.³ C07C *59/76, 69/738*
U.S. Cl. 560—176 **2 Claims**

1. A 5-keto-α,ω-alkenedioic acid or ester of the formula



where
a double bond is in one of the positions indicated by the broken lines,
R_1 and R_2 each independently is a hydrogen atom or a C_1-C_4-alkyl group,
x is 9, 10 or 11, and
one of y and z is 2 and the other is 1 or 2.

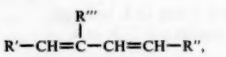
4,259,519

PROCESS FOR THE CARBONYLATION OF DIOLEFINS

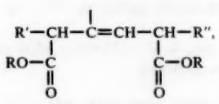
John K. Stille, Fort Collins, Colo., assignor to Polymer Sciences Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 591,120, Jun. 27, 1975, abandoned. This application Jul. 19, 1978, Ser. No. 926,132
Int. Cl.³ C07C *67/38*
U.S. Cl. 560—193 **21 Claims**

1. In the conversion of olefins to carboxylic esters whereby a conjugated diolefin having the formula:



wherein R′ and R″ are each independently H, saturated alkyl, or aryl and R‴ is H or methyl, is carbonylated, by the 1,4-addition thereto of carbon monoxide and an alcohol of the formula ROH, to form an unsaturated dicarboxylic ester having the formula:



wherein R is aralkyl or saturated alkyl, the improvement comprising charging to a reaction vessel the diolefin, a copper(II) salt, a nucleophilic base selected from the group consisting of amines, carbonates, and alkali and alkaline earth metal salts of carboxylic acids, a catalytically effective amount of a palladium(II) salt, and amounts of carbon monoxide and alcohol equal to or greater than the stoichiometric equivalent of diolefin, and subjecting the contents of the charged vessel in the absence of water and oxygen to a carbon monoxide pressure and a temperature sufficient to effect the carbonylation reaction, said process being further characterized in that the amount of copper(II) salt employed is at least sufficient to substantially oxidize the palladium(0) formed in the process back to palladium-(II) and the amount of base employed is equal to at least 1 molar equivalent of copper(II) salt.

4,259,520

PREPARATION OF BUTANEDICARBOXYLIC ACID ESTERS

Rudolf Kummer, Frankenthal; Heinz-Walter Schneider, Ludwigshafen, and Franz-Josef Weiss, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 10, 1979, Ser. No. 2,329
Int. Cl.³ C07C *67/38*
U.S. Cl. 560—204 **3 Claims**

1. In the process for the preparation of butanedicarboxylic acid esters by
(a) reacting butadiene or hydrocarbon mixtures containing butadiene with carbon monoxide and a C_1–C_4-alkanol in the presence of a tertiary nitrogen base and a cobalt carbonyl catalyst at from 80° to 150° C. under superatmospheric pressure,
(b) removing the greater part of the tertiary nitrogen base together with any excess hydrocarbon from the reaction mixture and
(c) reacting the resulting pentenoic acid ester, in the presence of the catalyst remaining in the reaction mixture, and in the presence of the remaining amount of tertiary nitro-

gen base, with carbon monoxide and a C_1- to C_4-alkanol at from 140° to 200° C. under superatmospheric pressure, to give the butane-dicarboxylic acid ester,

the improvement wherein the catalyst is not separated from the reaction mixture during states (a) to (c), the reaction mixture in stage (c) is substantially free from the dissolved butadiene, and at least 80% of the cobalt catalyst is not in the form of a π-allyl complex with butadiene by maintaining the conversion in stage (a) of at least 99% of the butadiene in the reaction mixture or by treating the mixture remaining after the removal of the hydrocarbons in stage (b) with carbon monoxide under a pressure of from 50 to 200 bar at from 100° to 160° C. while maintaining a molar ratio of the cobalt catalyst to the tertiary nitrogen base of 1:20–50.

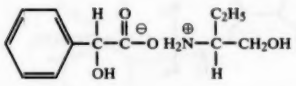
4,259,521

PROCESS FOR RESOLVING DL-MANDELIC ACID

John Kazan, Bridgewater, and Chen S. Yu, Middlesex, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 9, 1979, Ser. No. 83,186
Int. Cl.³ C07B *20/00*
U.S. Cl. 562—401 **11 Claims**

1. In a process for resolving DL-mandelic acid comprising: (a) reacting DL-mandelic acid with optically active 2-amino-1-butanol in water, in a lower aliphatic alcohol or in a mixture thereof, to form an optically active mandelate salt represented by formula (I)



(I)

(b) cooling and recovering said optically active mandelate salt; (c) mixing said mandelate salt with water and distilling off any residual alcohol; (d) acidifying the alcohol-free mixture with a mineral acid; and (3) cooling and recovering optically active mandelic acid, the improvement comprising:

(1) recycling the mother liquor of step (b) into step (a) until said mother liquor becomes saturated with the diastereomeric isomer of said mandelate salt;

(2) (i) heating said mother liquor with an alkalizing agent to obtain a racemic solution of mandelic acid; or
(ii) heating a mixture consisting essentially of an optically active 2-amino-1-butanol, an optically active mandelic acid, and an alkalizing agent, substantially in the absence of any other solvent, to obtain a solution containing DL-mandelic acid and an optically active 2-amino-1-butanol.

(3) neutralizing said racemic solution with a mineral acid, a mineral acid salt of optically active 2-amino-1-butanol, or a mineral acid salt of optically active 2-amino-1-butanol and mandelic acid, in a lower aliphatic alcohol, to precipitate an alkali or alkaline earth metal salt;

(4) separating said metal salt;

(5) recycling the mother liquor to step (4) into step (a); and

(6) recycling the mother liquor of step (e) into step (c) until said mother liquor becomes saturated with a mineral acid salt of optically active 2-amino-1-butanol and mandelic acid.

4,259,522

PROCESS FOR THE PRODUCTION OF ISOPHTAHALIC ACID

Jacques D. V. Hanotier, Saint-Lambert, Belgium, assignor to Labofina S.A., Brussels, Belgium

Filed Dec. 17, 1979, Ser. No. 104,470
Int. Cl.³ C07C *51/265*
U.S. Cl. 562—412 **11 Claims**

1. Process for producing isophthalic acid comprising oxidizing a substrate selected from the group consisting of m-toluic acid and mixtures of m-toluic acid with m-xylene and/or other partially-oxidized derivatives of m-xylene with an oxygen-containing gas in a homogeneous aqueous solution comprising at least 10 weight percent water at a temperature of from about 140° C. to 220° C. and a pressure sufficient to maintain some of the water in the liquid state, in the presence of a catalytically active metal compound selected from the group consisting of manganese compounds and mixtures of manganese compounds with cobalt compounds; the concentration of metal compounds being at least the amount M in millimoles per kilogram of reaction mixture given by the following equation:

$$M = \frac{(y + 45.9\,z)(x + 0.0967) + 9.50\,x}{3.02\,x}$$

where x is the mole fraction of manganese in the metal catalyst, y is the mole ratio of water to m-toluic acid, and z is the mole ratio of dissolved isophthalic acid to m-toluic acid.

4,259,523

ORGANIC COMPOUNDS

Pietro Bollingen, Bottmingen, and Manfred Krieger, Pratteln, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 914,401, Jun. 12, 1978, abandoned, which is a continuation of Ser. No. 740,182, Nov. 9, 1976, abandoned, which is a continuation-in-part of Ser. No. 697,403, Jun. 18, 1976, abandoned. This application May 11, 1979, Ser. No. 37,719
Int. Cl.³ C07C *177/00*
U.S. Cl. 562—500 **3 Claims**

1. A compound which is 15-deutero-11α,15R-dihydroxy-16,16-dimethyl-9-keto-2,3-(+)-trans-methylene-prosta-5cis,13 trans-dienoic acid.

4,259,524

METHOD FOR PRODUCING DIBASIC FATTY ACID USING LIQUID NITROGEN DIOXIDE (N_2O_4) AS REACTING AGENT

Wataru Ando, Sakura, and Ichiro Nakaoka, Machida, both of Japan, assignors to K.K. Pollution Preventing Research Laboratory, Tokyo, Japan

Continuation of Ser. No. 868,294, Jan. 10, 1978, abandoned, which is a continuation of Ser. No. 717,179, Aug. 24, 1976, abandoned. This application Jul. 9, 1979, Ser. No. 55,591
Claims priority, application Japan, Aug. 27, 1975, 50-103071; Jul. 6, 1976, 51-79445
Int. Cl.³ C07C *51/27, 51/275, 51/245*
U.S. Cl. 562—526 **4 Claims**

1. A method for producing a dibasic fatty acid comprising oxidizing and ring-opening an alicyclic compound containing from about 5 to 12 carbon atoms by adding the compound to liquid N_2O_4, said oxidizing and ring-opening reaction being operated at a temperature below the boiling point of liquid N_2O_4 in the absence of catalyst, said alicyclic compound being selected from the group consisting of cycloalkanones, cycloalkanols, cycloalkylnitrates, cycloalkylnitrites and cycloalkanone oximes.

4,259,525

METHIONINE PROCESS

Kurt H. Schaaf, Clearwater, Fla., assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Oct. 1, 1979, Ser. No. 80,198
Int. Cl.³ C07C *149/247*
U.S. Cl. 562—559 **10 Claims**

1. A process for preparing methionine from 5-(beta-methylmercaptoethyl)-hydantoin comprising hydrolyzing at atmospheric pressure and a temperature of from about 105° C. to about 230° C., one mole of the hydantoin with from about one mole to about eight moles of a metal hydroxide in a medium

containing from about 500 to about 5000 milliliters of an alkanol having a boiling point of from about 125° to about 230° C. and thereafter recovering the methionine.

4,259,526

PROCESS FOR THE PREPARATION OF MIXTURES OF POLYAMINES OF THE POLYAMINO-POLYARYL-POLYMETHYLENE TYPE

Kenneth L. Dunlap, New Martinsville, W. Va., and Hartmut Knofel, Odenthal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany and Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Feb. 21, 1979, Ser. No. 13,765
Int. Cl.³ C07C *85/145*
U.S. Cl. 564—331 **9 Claims**

1. A process for the production of mixtures of polyamines of the polyamino-polyaryl-polymethylene type comprising:

(a) reacting an aromatic amine with formaldehyde in the presence of an aqueous acid catalyst at a temperature of from 10° to 100° C. or subjecting a condensate which has been obtained from an aromatic amine and formaldehyde in the absence of any acid catalyst to a first rearrangement in the presence of an aqueous acid catalyst at a temperature of from 10° to 100° C. to obtain a secondary amine-containing intermediate mixture, the amount of acid employed corresponding to a protonation degree of from 0.1 to 25%,

(b) adding aqueous acid catalyst to the mixture of step (a) in an amount such that the total amount of acid corresponds to a protonation degree of from 10 to 100%,

(c) subjecting the resultant mixture of step (b) to a rearrangement reaction at a temperature of from 75° to 150° C. to obtain an acidic condensation mixture containing said polyamines, and

(d) recovering said polyamines.

8. A process for producing a mixture of polyamines of the polyamino-polyaryl-polymethylene type having an increased amount of ortho-substitution comprising

(a) reacting an aromatic amine with formaldehyde in the presence of an aqueous acid catalyst at a temperature of from 10° to 100° C. or subjecting a condensate which has been obtained from an aromatic amine and formaldehyde in the absence of any acid catalyst to a first rearrangement in the presence of an aqueous acid catalyst at a temperature of from 10° to 100° C. to obtain a secondary amine-containing intermediate mixture, the amount of acid employed corresponding to a protonation degree of from 0.1 to 25%,

(b) adding aqueous acid catalyst to the mixture of step (a) in an amount such that the total amount of acid corresponds to a protonation degree of from 10 to 100%,

(c) subjecting the resultant mixture of step (b) to a rearrangement reaction at a temperature of from 75° to 150° C. to obtain an acidic condensation mixture containing said polyamines,

(d) recovering said polyamines.

4,259,527

MOLYBDENUM AND TUNGSTEN PEROXO COMPLEXES USEFUL AS OXIDATION CATALYSTS

Frank Mares, Whippany; Stephen E. Jacobson, Randolph, and Reginald T. Tang, Bridgewater, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 842,130, Oct. 14, 1977, Pat. No. 4,171,313. This application May 18, 1979, Ser. No. 40,338
Int. Cl.³ C07C *45/29*
U.S. Cl. 568—311 **8 Claims**

1. In a process for oxidation of secondary alcohols to form ketones the improvement which comprises contacting the secondary alcohols with hydrogen peroxide as oxidizing agent in the presence of a quantity, sufficient to cause said oxidation, of a covalent peroxo complex of molybdenum or tungsten wherein molybdenum or tungsten atoms are connected to a complexing aza heterocyclic aromatic compound having carboxylic acid group on a carbon atom which is in alpha-position relative to aza nitrogen.

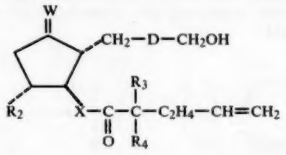
4,259,528

2-DECARBOXY-2-HYDROXYMETHYL-19,20-DIDEHYDRO-PG$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 26,066, Apr. 2, 1979. This application Oct. 17, 1979, Ser. No. 85,625
Int. Cl.³ C07C *177/00*
U.S. Cl. 568—379 **67 Claims**

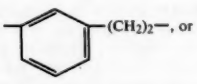
1. A compound of the formula



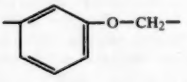
wherein D is

(1) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(2) —$(CH_2)_3$—CH_2—CF_2—,
(3) —$(CH_2)_3$—O—CH_2—,
(4) —$(CH_2)_2$—O—$(CH_2)_2$—,
(5) —CH_2—O—$(CH_2)_3$—,

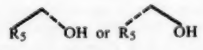
(6)



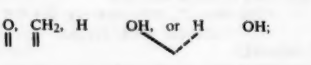
(7)



wherein g is zero, one, two, or three;
wherein Q is



wherein R_5 is hydrogen or methyl,
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein W is



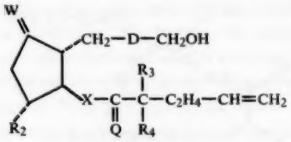
and wherein X is cis- or trans-CH=CH— or —C≡C—.

4,259,529
2-DECARBOXY-2-HYDROXYMETHYL-19,20-DIDEHYDRO-13,14-DIHYDRO-PG$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

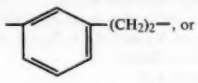
Division of Ser. No. 26,066, Apr. 2, 1979. This application Oct. 17, 1979, Ser. No. 85,626
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 568—379 29 Claims

1. A compound of the formula

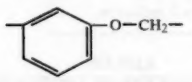


wherein D is

(1) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(2) —$(CH_2)_3$—CH_2—CF_2—,
(3) —$(CH_2)_3$—O—CH_2—,
(4) —$(CH_2)_2$—O—$(CH_2)_2$—,
(5) —CH_2—O—$(CH_2)_3$—,

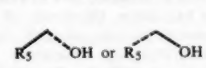


(6)

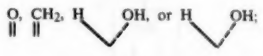


(7)

wherein g is zero, one, two, or three; wherein Q is



wherein R_5 is hydrogen or methyl, wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl; wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; wherein W is



and wherein X is —CH_2CH_2—.

4,259,530
PROCESS FOR THE PRODUCTION OF ALDEHYDES BY HYDROFORMYLATION

Yoshihisa Matsushima; Tadamori Sakakibara; Katsumi Kaneko, all of Ooit; Shozo Wada, Zushi; Yoshio Ishii, Nagoya; Yukio Nagashima, and Nobukazu Okamoto, both of Ooi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 7, 1979, Ser. No. 73,662
Claims priority, application Japan, Apr. 6, 1979, 54-40994
Int. Cl.^{3} C07C *45/50*
U.S. Cl. 568—454 8 Claims

1. A process for the production of aldehydes having one more carbon atom than the starting α-olefin by reacting an α-monoolefin of 2–8 carbon atoms with hydrogen and carbon monoxide, which comprises carrying out the reaction at temperatures in the range of 60° to 120° C. and pressures in the range of 1 to 30 atmospheres in the presence of a rhodium source and free mixed ligands comprising triphenyl phosphine and triphenyl arsine in excess of the quantity required for coordination to the rhodium atom, the excess of total mixed ligands being 50 to 500 mols per gram atom rhodium, the mol ratio of triphenyl arsine to triphenyl phosphine being from 0.5 to 3.0.

4,259,531
POLYMERIZATION OF TETRAHYDROFURAN TO PREPARE POLYTETRAMETHYLENE ETHER GLYCOLS

Otto H. Huchler, Limburgerhof; Walter Mesch, Ludwigshafen; Siegfried Winderl, Heidelberg-Wieblingen; Herbert Mueller, and Herwig Hoffmann, both of Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 812,619, Jul. 5, 1977, abandoned, which is a continuation of Ser. No. 612,019, Sep. 10, 1975, abandoned. This application Dec. 15, 1978, Ser. No. 969,712
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1974, 24459618
Int. Cl.^{3} C07C *41/01, 41/26, 43/13*
U.S. Cl. 568—617 5 Claims

1. In the process for preparing polytetramethylene ether glycols of molecular weights of about 300 to 4500, wherein tetrahydrofuran is polymerized in the presence of a catalyst and a promoter and esterified polytetramethylene ether glycols produced are converted to polytetramethylene ether glycols by saponification or transesterification, the improvement comprising:

(a) using as said catalyst an adduct of antimony pentachloride with carboxylic acids or carboxylic acid esters having 1 to 10 carbon atoms selected from the group consisting of aliphatic monocarboxylic acids, aliphatic dicarboxylic acids, aromatic monocarboxylic acids, and aromatic dicarboxylic acids and their esters with monohydric or polyhydric alcohols in such an amount that the antimony pentachloride content is from about 0.01 to 0.2 percent by weight based on the total reaction mixture, and

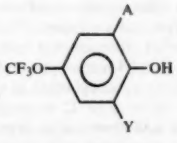
(b) using as the promoter acetic anhydride in an amount of from about 1 to 20 mole percent based on the tetrahydrofuran.

4,259,532
HERBICIDAL ETHERS

John B. Adams, Jr., Hockessin, and Joel B. Wommack, Jr., Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 863,268, Dec. 22, 1977, Pat. No. 4,192,669. This application Sep. 17, 1979, Ser. No. 76,795
Int. Cl.^{3} C07C *43/205*
U.S. Cl. 568—649 1 Claim

1. A compound of the formula



wherein

A is Cl or Br; and

Y is H or Cl;

provided that when A is Br, Y must be H.

4,259,533

LIQUID PHASE PROCESS FOR THE MANUFACTURE OF METHYL TERTIARY ETHERS

Andrew T. Guttmann, Maple Heights, and Robert K. Grasselli, Chagrin Falls, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 697,098, Jun. 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 494,575, Aug. 5, 1974, abandoned. This application Sep. 4, 1979, Ser. No. 71,806
Int. Cl.[3] C07C *41/06*
U.S. Cl. 568—697 10 Claims

1. A process for the preparation of methyl-t-alkyl ethers comprising reacting a mixture of tertiary olefin of the formula $RHC=CR_2^1$, wherein R is H or alkyl and R^1 is alkyl, and methanol in the liquid phase in the presence of a homogeneous, free-heteropoly acid catalyst having the formula:

$$H_nA_aD_cO_y.XH_2O$$

wherein
A is P, B, Si, Ge, Sn, As, Sb, U, Mn, Re, Cu, Ni, Co, Fe, Ce, Th, Cr or mixture thereof; and
D is Mo, W, V or mixture thereof; and
wherein
a=0.1–10;
c=6–18;
n is the number of acidic hydrogens in the catalyst, and is a number greater than one;
y is the number of oxygens in the catalysts, and is a number ranging from about 10 to 70; and
x is the moles of water of crystallization and is a number ranging from 0 to about 40.

4,259,534

METHOD FOR THE PRODUCTION OF 2,4,6-TRI(3,5-DITERTIARY BUTYL-4-HYDROXYBENZYL) MESITYLENE

Yakov A. Gurvich, Sretensky bulvar, 6, kv. 61; Simona T. Kumok, Poklonnaya ulitsa, 4, kv. 32; Galina G. Latysheva, Bolshaya Pereyaslavskaya ulitsa, 6, korpus 2, kv. 156; Anna I. Rybak, Amurskaya ulitsa, 10, korpus 2, kv. 42; Evgeny L. Styskin, Khalturinskaya ulitsa, 10, korpus 2, kv. 42, all of Moscow; Alexandr G. Liakumovich, ulitsa Galeeva, 10, kv. 8, Kazan; Jury I. Michurov, prospekt Lenina 13, kv. 4, Sterlitamak Bashkirskaya ASSR; Rufina A. Filipova, ulitsa Safrazyana, 10; Vladimir A. Yanshevsky, ulitsa Kommunisticheskaya, 42, kv. 12, both of Novokuibyshevsk Kuibyshevskoi oblasti; Grigory I. Rutman, ulitsa Revoljutsionnaya, 17, kv. 6, and Igor J. Logutov, prospekt Lenina, 87, kv. 84, both of Sterlitamak Bashkirskaya ASSR, all of U.S.S.R.

Filed Oct. 7, 1977, Ser. No. 840,329
Claims priority, application U.S.S.R., Oct. 12, 1976, 2410436
Int. Cl.[3] C07C *37/16*
U.S. Cl. 568—720 4 Claims

1. A method for the production of 2,4,6-tri(3,5-ditertiary butyl-4-hydroxybenzyl)mesitylene residing in treating a mesitylene solution in a chloroalkane simultaneously with sulfuric acid used as a catalyst, and a solution of 3,5-ditertiary butyl-4-hydroxybenzyl alcohol ether selected from the group consisting of 2,6-ditertiary butyl-4-methoxymethylphenol and bis-3,5-ditertiary butyl-4-hydroxybenzyl ether, in said chloroalkane at a temperature of −20° to +20° C. to produce a reaction mixture consisting of an acid phase and an organic phase including the target product; separating said phases; neutralizing the organic phase by the treatment thereof with gaseous ammonia used as an alkaline agent to form ammonium sulfate; separating ammonium sulfate; distilling off the chloroalkane from the remaining solution.

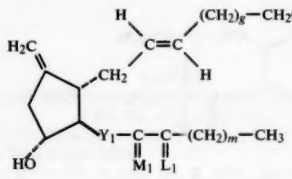
4,259,535

2-DECARBOXY-2-HYDROXYMETHYL-9-DEOXY-9-METHYLENE-5,6-DIDEHYDRO-PGF$_1$ COMPOUNDS

Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 35,144, May 1, 1979. This application Jan. 28, 1980, Ser. No. 115,968
Int. Cl.[3] C07C *177/00*
U.S. Cl. 568—838 2 Claims

1. A prostaglandin analog of formula VI



VI

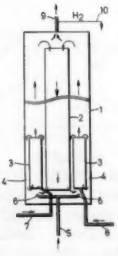
wherein Y_1 is trans-CH=CH—, —C≡C—, —CH_2CH_2—, or cis-CH=CH—;
wherein M_1 is α-R_5:β-OH or α-OH:β-R_5, wherein R_5 is hydrogen or methyl;
wherein L_1 is α-R_3:β-R_4 α-R_4:βR_3, or a mixture of α-R_3:β-R_4 and α-R_4:β-R_3 wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein g is 3, 4, or 5; and
wherein m is one to 5 inclusive.

4,259,536

CONTINUOUS PROCESS OF PRODUCING FATTY ALCOHOLS

Theodor Voeste; Hans J. Schmidt, both of Frankfurt am Main, and Friedemann Marschner, Oberursel, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 5, 1979, Ser. No. 100,576
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1978, 2853990
Int. Cl.[3] C07C *29/136*
U.S. Cl. 568—885 4 Claims



1. In a continuous process of producing fatty alcohols by a catalytic hydrogenation of fatty acids or fatty acid derivatives at a temperature of 240° to 330° C. and pressure of 200 to 700 bars in the presence of a catalyst containing copper-chromium oxide, comprising feeding the feedstock to be hydrogenated into a high pressure chamber equipped with a return pipe, feeding hydrogen and feeding a dispersion of the catalyst into said high pressure chamber, thoroughly mixing the ingredients, causing the reaction to take place in the presence of a large quantity of material which has been almost completely or completely reacted, withdrawing the surplus hydrogen and

recycling it to the high pressure chamber, and withdrawing the reaction product, the improvement wherein the reactor is a generally vertically disposed reactor within which sits a generally vertically disposed return pipe surrounded by said high pressure chamber in fluid communication therewith whereby said high pressure chamber is in the form of an annular chamber, hydroden is introduced and distributed into said high pressure chamber through 4 to 10 nozzles disposed in the lower portion of the annular chamber, said nozzles being so dimensioned that the pressure loss upon passage of hydrogen into said annular chamber is 2.5 to 50 bars, said annular chamber contains guide tubes above said nozzles which guide tubes are so dimensioned that the total cross-sectional area of these guide tubes amounts to 70 to 150 percent of the cross-section of said return pipe, said nozzles being centrally disposed under said guide tubes at a distance therefrom which is one-half to twice the diameter of the guide tube, the height of each guide tube being 3 to 10 times the diameter of the guide tube, the lower end of each guide tube being approximately level with the lower end or disposed up to three guide tube diameters above the lower end of the return pipe, and the feedstock to be hydrogenated and the catalyst dispersion are fed above the nozzles for feeding hydrogen.

4,259,537

SHAPE SELECTIVE REACTIONS WITH GROUP VIA MODIFIED ZEOLITE CATALYSTS

Chin-Chiun Chu, North Brunswick, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Mar. 17, 1980, Ser. No. 130,953

Int. Cl.[3] **C07C** *2/68, 5/22, 5/52*

U.S. Cl. 585—467 **26 Claims**

1. A process for conversion of organic compounds, said process comprising contacting said organic compounds with a crystalline zeolite catalyst at a temperature of between about 250° C. and about 750° C. and a pressure within the approximate range of 10^5 N/m^2 to 10^7 N/m^2, said zeolite being characterized by a silica to alumina mole ratio of at least 12 and a constraint index within the approximate range of 1 to 12, said zeolite having undergone prior modification by treatment with compounds containing one or more of the elements comprising the Group VIA metals, to deposit thereon at least 0.25 weight percent of such element.

15. The process of claim **1**, **2**, **3**, **4**, **5**, **6**, **7**, **8**, **9**, **10**, **11**, **12**, **13** or **14** wherein said conversion comprises the alkylation of an aromatic compound by contacting said compound with an alkylating agent to produce dialkylbenzene compounds wherein the 1,4-dialkylbenzene isomer is present in excess of its normal equilibrium concentration.

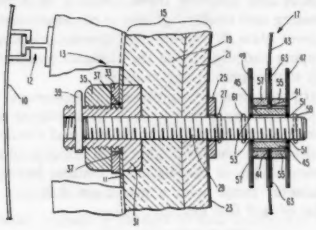
19. The process of claim **1**, **2**, **3**, **4**, **5**, **6**, **7**, **8**, **9**, **10**, **11**, **12**, **13** or **14** wherein said conversion comprises the transalkylation of aromatic compounds to produce dialkylbenzene compounds wherein the 1,4-dialkylbenzene isomer is present in excess of its normal equilibrium concentration.

4,259,538

VACUUM FURNACE ARRANGEMENT HAVING AN IMPROVED HEATING ELEMENT MOUNTING MEANS

William R. Jones, 244 Hampshire Dr., Chalfont, Pa. 18914

Filed Jan. 31, 1980, Ser. No. 117,260
Int. Cl.³ F27D *11/00*; H05B *3/00*
U.S. Cl. 13—25 **9 Claims**



1. A hot zone chamber arrangement for use in a vacuum furnace having an improved means for mounting the heating element therein comprising in combination: hot zone chamber means having a wall with outer and inner surfaces and wherein said inner surface defines a substantially open chamber, said wall having an aperture therein; means to impede heat transmission having an aperture therein and secured to said inside surface; threaded support means secured to said wall and formed to have a receiving threaded section located through said aperture in said wall; threaded mounting rod means threadably disposed within said threaded support means and disposed to pass through said aperture in said means to impede heat transmission into said substantially open chamber; heating element means disposed within said open chamber and inwardly away from said means to impede heat transmission, said heating element means formed to hve an aperture therein and disposed to have said rod pass therethrough; electrical insulation means disposed between said heating element and said rod but formed to secure said rod with said heating element and further formed and disposed to be easily removable from securing said heating element to said rod when said rod is unthreaded from said threaded support means.

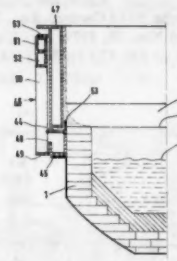
4,259,539

MELTING FURNACE

Emil A. Elsner, Baden-Baden; Dieter C. Ameling, Neu-Wulmstorf; Rolf Assenmacher, Willstätt, and Gerhard Fuchs, Willstätt-Legelshurst, all of Fed. Rep. of Germany, assignors to Korf-Stahl AG, Baden-Baden, Fed. Rep. of Germany, a part interest

Continuation-in-part of Ser. No. 765,789, Feb. 4, 1977, Pat. No. 4,119,792. This application Jun. 6, 1978, Ser. No. 913,192
Claims priority, application Sweden, Jun. 6, 1977, 7706550
The portion of the term of this patent subsequent to Oct. 10, 1995, has been disclaimed.
Int. Cl.³ F27D *1/12*
U.S. Cl. 13—32 **32 Claims**

1. A melting furnace, especially an arc melting furnace, having a bottom vessel, a furnace wall above the bottom vessel and containing at least one water cooling box disposed higher than the melt level of the furnace, and a flange between the upper edge of the bottom vessel and said at least one water cooling box, said flange being so constructed as to catch water



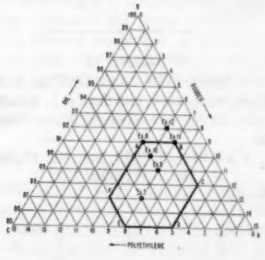
flowing down on the surface of said water cooling box facing the inside of the furnace and cause it to pass outwardly.

4,259,540

FILLED CABLES

Raffaele A. Sabia, Atlanta, Ga., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 910,192, May 30, 1978, Pat. No. 4,176,240. This application Apr. 20, 1979, Ser. No. 31,996
The portion of the term of this patent subsequent to Nov. 27, 1996, has been disclaimed.
Int. Cl.³ H01B *7/28*
U.S. Cl. 174—23 C **8 Claims**



1. A cable comprising:

a plurality of conductors contained within a sheath leaving voids between the conductors, and between the conductors and the sheath, and a filling material filling the voids the invention characterized in that the filling material comprises a mixture of:

(X) an ASTM Type 103, 104A or 104B, or mixtures thereof, (paraffinic or naphthenic) oil, having a minimum sp. gr. of 0.860, a minimum SUS viscosity at 210 degrees F. of 45, a maximum pour point ASTM D 97 of 20 degrees F. and a maximum of 5 percent aromatic oils,

(Y) a styrene-ethylene butylene-styrene block copolymer having a styrene-rubber ratio of approximately 0.2 to 0.5,

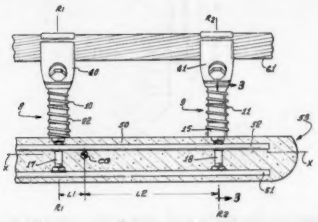
(Z) polyethylene having a softening point of 110 degrees C. to 130 degrees C.

the ingredients X, Y and Z having relative proportions falling within the shaded area bounded by ABCDEF of the FIGURE.

4,259,541
VIBRATION DAMPER FOR OVERHEAD ELECTRICAL CABLES

Raymond R. Bouche, 9419 Cordero Ave., Tujunga, Calif. 91042

Filed Nov. 20, 1979, Ser. No. 96,203
Int. Cl.³ H02G 7/14
U.S. Cl. 174—42 **8 Claims**



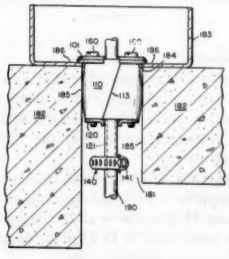
1. In a device for damping Aeolian vibrations in a suspended cable,

which device employs means including at least two resilient members for connecting an inertial member to said cable, one of said resilient members being connected to said inertial member near or at the center of gravity thereof and the other resilient member being connected to said inertial member toward one end thereof, the stiffness of said resilient members being such that the resonance frequency of free vibration in a vertical plane about a point at the one end of said inertial member is about twice the resonance frequency of free vibrations in a vertical plane about a point at or near the center of gravity of the inertial member, the improvement wherein at least one of said resilient members comprises a coil spring component and an elastomer component acting in parallel and in which said elastomer component has a Shore rating of at least 30 and a stiffness that is at least 10% of the stiffness of the spring and a damping coefficient that is at least 10% of the critical value.

4,259,542
POKE-THROUGH ELECTRICAL FITTING

James F. Tehan, Naugatuck, and Robert L. Bradley, Burlington, both of Conn., assignors to General Signal Corporation, Stamford, Conn.

Filed Mar. 5, 1979, Ser. No. 17,504
Int. Cl.³ H02G 3/22
U.S. Cl. 174—48 **12 Claims**



1. An assembly for facilitating the installation, support, and protection of an elongate member, such as one or more electrical circuit conductors, or a communication cable, to be passed through a hole in a barrier, such as a fire rated concrete floor, or the like, and comprising in combination:

(a) an upper and lower compression plate;

(b) a resilient grommet having a passageway therethrough for accommodating an elongate member;

(c) said upper and lower compression plates each including an opening at least as large as said passageway and in alignment therewith for accommodating the passage of an elongate member;

(d) fastening means coupling said upper and lower compression plates and drawing them towards each other for compressing said resilient grommet therebetween;

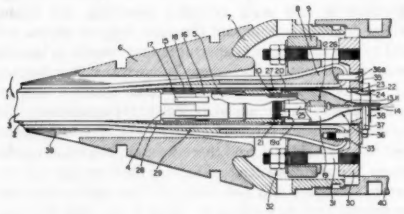
(e) said lower plate having coupled thereto gripping means for gripping and supporting the elongate member passed through said assembly; and wherein

(f) said gripping means comprises an appendage on said lower plate having a first portion for clamping elongate members having a first diameter range and a second portion including means for mating with the convolutions of an armored cable or flexible metal conduit having a second diameter range with a maximum diameter smaller than that of said first diameter range.

4,259,543
CABLE TERMINATION

Ronald C. Oldham, Chandlers Ford, England, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 6, 1979, Ser. No. 9,783
Claims priority, application United Kingdom, Feb. 7, 1978, 04851/78
Int. Cl.³ H02G 9/02
U.S. Cl. 174—70 S **14 Claims**



1. A termination structure for interfacing a main coaxial cable and a sealable housing, the inner and outer conductor of said main cable being joined to the inner and outer conductor of a tail coaxial cable extending from said housing, respectively, comprising:

first means comprising a tapered dielectric molding between the interface ends of said main and tail cables with a conductive mesh shaped to the outer surface of said tapered part;

second means comprising a continuous conductive tube extending between said main cable outer conductor and the wall of said housing;

and third means for mechanically and electronically anchoring said conductive tube to said housing wall at one end, and for electrically securing said tube to said main cable outer connector at the other end.

4,259,544
ELECTRIC CABLE WITH A LONGITUDINAL STRENGTH MEMBER

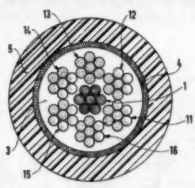
Andre Litauer, Chilly Mazarin, France, assignor to Societe Anonyme dite: Les Cables de Lyon, Lyons, France

Filed Jan. 4, 1979, Ser. No. 944
Claims priority, application France, Jan. 10, 1978, 78 00506
Int. Cl.³ H01B 7/24
U.S. Cl. 174—102 R **3 Claims**

1. An electric cable comprising:

a central conductor,

an insulator surrounding said central conductor,
said insulator bearing a plurality of embedded cords of resin agglomerated fibers of aromatic polyamide,
said cords being disposed around said central conductor and making up at least part of said insulator,
an outer conductor disposed around said insulator,
an outer sheath surrounding said outer conductor,



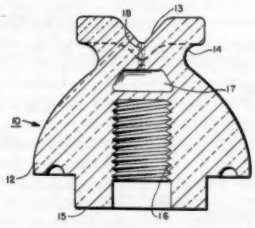
said cords extending parallel to said conductor comprising six cords in number with each cord being formed by seven strands twisted together, three of said cords being twisted in one helical direction and the other three cords being twisted in in the opposite helical direction and being disposed alternately with the first three cords, and with the set of said cords being embedded in polyethylene insulation.

4,259,545

HIGH VOLTAGE SAFETY-GLOW INSULATOR

Robert K. Hayden, P.O. Box 488, La Plata, Md. 20646

Filed Dec. 31, 1979, Ser. No. 108,690
Int. Cl.³ H01B *17/20;* **G01R** *19/145;* **G08B** *21/00*
U.S. Cl. 174—139 **7 Claims**



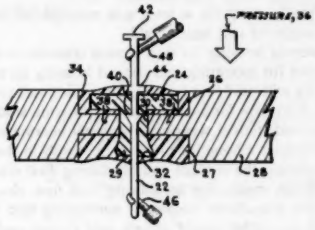
1. An insulator for a high voltage transmission line;
said insulator having a bottom end and a top end;
said insulator having, at its top end, means to attach an electrical conductor to said top end; in combination with
a safety-glow indicator for indicating whether or not the said electrical conductor is energized;
said safety-glow indicator comprising a closed chamber, located in the upper portion of said insulator, and filled with an electroluminescent material;
a filament connector terminating at said chamber and extending therefrom upwardly to the top of said insulator, said filament connector being sealed in said insulator;
the material of said insulator adjacent said chamber being at least translucent;
whereby, when said insulator is associated with a conductor which is energized, said electroluminescent material will glow;
thereby signalling the electrified condition of said conductor.

4,259,546

ELECTRICAL FEEDTHROUGH SYSTEM FOR PRESSURIZED CONTAINERS

Harry E. Conway, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 1, 1979, Ser. No. 90,385
Int. Cl.³ H01B *17/30*
U.S. Cl. 174—153 R **3 Claims**



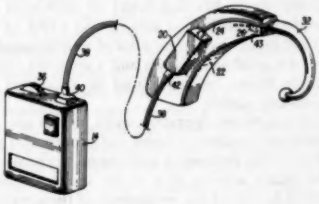
1. A pressurized containment device with electrical feedthrough means comprising
A pressurized containment vessel having an aperture through a wall thereof, an enlarged recessed region surrounding the aperture on the outer surface of said wall and a matching enlarged recessed region surrounding the aperture on the interior surface of said wall,
a plug of insulative material having a flange on one end thereof, said plug having resilience and being slightly larger than said aperture, said plug being forced through said aperture whereby the flanged end thereof is substantially in register with the inner wall surface recessed region and the distal end thereof is extended through said aperture and expanded to its normal size,
a metal conductor rod through said plug extending into the interior and beyond the outer surface of said containment vessel, said rod having a first flange on its interior end, a second flange adjacent the inner surface of the plug flange, and a tapered projection at a point within the length of said plug, said second flange and said tapered projection cooperating to inhibit insertion and extraction of said rod, and
epoxy filling said enlarged recessed regions.

4,259,547

HEARING AID WITH DUAL PICKUP

Robert A. Valley, Branford, and David S. MacDonald, Cheshire, both of Conn., assignors to Earmark, Inc., Hamden, Conn.

Continuation-in-part of Ser. No. 900,203, Apr. 26, 1978, abandoned. This application Feb. 12, 1979, Ser. No. 11,728
Int. Cl.³ H04R *1/28, 25/00*
U.S. Cl. 179—1 B **18 Claims**



1. A hearing aid system comprising:
a hearing aid including a microphone responsive to audible sounds for producing first electrical signals, means for amplifying said first electrical signals, and first transducer

means for converting said first electrical signals to audible sound signals;

second transducer means for generating sound signals in response to second electrical signals;

a hollow acoustic conduit extending between said second transducer means and said microphone for conducting the sound signals from said second transducer means to said microphone;

means for applying said second electrical signals to said second transducer means;

a first housing for at least said microphone and amplifying means of said hearing aid;

a second housing for said second transducer means; and,

means for mounting said second housing on said first housing with said first housing supporting said second housing.

16. A system for aiding a hard-of-hearing student in a classroom, said student wearing a personal hearing aid including a student microphone for picking up sounds in the environment surrounding the student and producing first electrical signals therefrom, means for amplifying said first electrical signals, and first transducer means for converting said first electrical signals to audible sound signals, said system including:

a teacher microphone and transmitter for the wireless transmission of signals representing the teacher's voice;

a receiver associated with the student, said receiver including a volume control means for controlling the magnitude of electrical output signals produced by said receiver;

a second transducer means responsive to the electrical output signals from the receiver for producing audible signals representing the teacher's voice;

an elongated hollow conduit for conveying said audible signals to a region near said student microphone for application to said student microphone simultaneously with said sounds from the environment whereby said student may simultaneously hear both said teacher's voice, at a sound level controlled by said volume control means, and said sounds from said environment.

4,259,548

APPARATUS FOR MONITORING AND SIGNALLING SYSTEM

Robert J. Fahey, Framingham; Robert A. Norbedo, North Andover, and J. Edward Schlener, Winchester, all of Mass., assignors to GTE Products Corporation, Stamford, Conn. and GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 14, 1979, Ser. No. 94,019

Int. Cl.[3] **H04M** *11/04*

U.S. Cl. 179—5 R **23 Claims**

1. In a monitoring and signalling system, apparatus comprising:

sensor means arranged to monitor the occurrence of an associated activity and operative in response to monitoring the occurrence of the activity to produce a signal indicative of the occurrence of the activity;

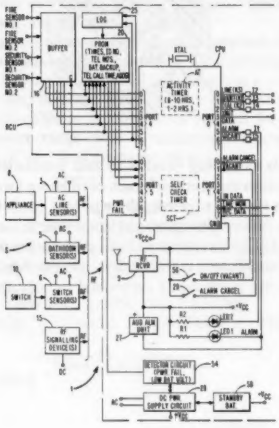
sensor activity recording means for recording sensor activity data representing a count of the number of times the sensor means has monitored its associated activity and produced signals, said data having a first value when the sensor means has not monitored its associated activity and has not produced signals and a different value when the sensor means has monitored its associated activity and produced signals;

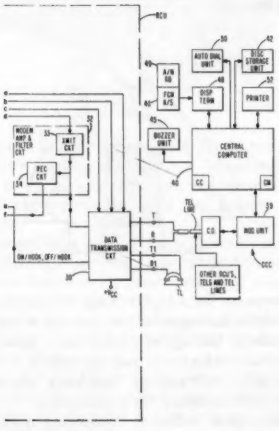
processing means operative when signals are produced by the sensor means to receive and process said signals and in response to processing each signal to change the value of the sensor activity data in the sensor activity recording means to record the occurrence of the activity monitored by the sensor means, whereby the sensor activity recording means maintains a continuing tally of the number of times the sensor means has monitored its associated activity and produced signals;

timing means operative on a regular basis to cause the existing sensor activity data recorded in the sensor activity recording means to be read out therefrom;

storage means arranged to store sensor presence data specifying the presence of the sensor means within the system; and

examining means arranged to examine the sensor activity data read out from the sensor activity recording means and the sensor presence data stored in the storage means,





and examining means being operative if the sensor activity data corresponding to the sensor means specified to be present in the system by the data in the storage means has the first value indicating that the sensor means has not monitored its associated activity and produced signals since the last readout of sensor activity data from the sensor activity recording means to produce an output condition indicative of this fact.

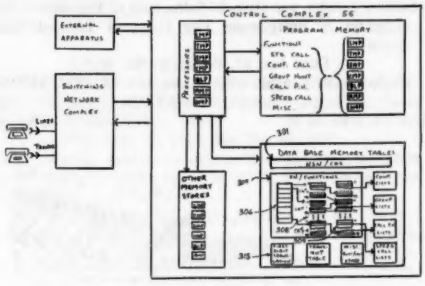
4,259,549
DIALED NUMBER TO FUNCTION TRANSLATOR FOR TELECOMMUNICATIONS SWITCHING SYSTEM CONTROL COMPLEX

Carl J. Stehman, LaGrange, Ill., assignor to Wescom Switching, Inc., Oak Brook, Ill.

Continuation-in-part of Ser. No. 734,732, Oct. 21, 1976, abandoned. This application Sep. 9, 1977, Ser. No. 832,006

Int. Cl.[3] **H04M** *3/38, 3/42;* **H04Q** *3/47, 3/52*

U.S. Cl. 179—18 ES **35 Claims**



1. In a telecommunication switching system adapted to be connected to lines and trunks, and having a digital switching network, the improvement comprising:

control means connected to said switching network for executing system operational functions in response to dialed numbers received from stations in separate customer groups, said customer groups comprising groups of stations on discrete sets of lines served by said system, all customer groups sharing hardware associated with said switching network while all operational functions are normally separately executed for each customer group in response to dialed numbers included within a separate comprehensive number plan for each customer group, one of said operational functions comprising processing a standard call between stations on lines in the same customer group,

said control means including data base memory means for storing coded electrical signals correlating system operational functions and dialed directory numbers separately for each customer group.

24. In a telecommunication switching system having a plurality of asynchronously operating microprocessor control units, means for distributing the functions of the system among said control units,

each microprocessor control unit including a microprocessor, memory means for causing the microprocessor to perform the functions distributed thereto, and interprocessor buffer means for communicating between microprocessors independently of at least one of the communicating microprocessors,

said microprocessor control units comprising, a line unit for control of line circuits, a trunk unit for control of trunk circuits, a register unit for processing dialing information, and a state unit; the improvement wherein:

one of said control units comprises a data base unit for performing dialed number translations including data base memory means for storing coded electrical signals correlating dialed numbers and system functions,

said state unit providing means for maintaining a current status record and issuing commands to the others of said units including commands based on dialed number translations made by said data base unit by accessing said data base memory means for forwarded to said state unit.

4,259,550
ACOUSTIC DEVICE WITH FLOATING VIBRATING MEANS

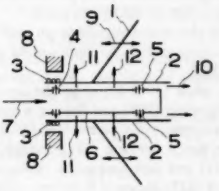
Yoshiro Nakamatsu, 1-10-309, 5-chome, Minamiaoyama, Minato-ku, Tokyo, Japan

Filed Apr. 11, 1979, Ser. No. 29,234

Claims priority, application Japan, Apr. 15, 1978, 53-43803; Apr. 17, 1978, 53-44202; Dec. 28, 1978, 53-161142; Dec. 28, 1978, 53-161143; Dec. 28, 1978, 53-161144

Int. Cl.[3] **H04R** *9/02*

U.S. Cl. 179—115.5 VC **12 Claims**



1. Acoustic device comprising: a main body having a magnet attached thereto, a vibrating means disposed to cooperate with the magnet of said main body for converting an electrical vibration into a mechanical vibration or vice versa, and a means for floating up said vibrating means to disengage from said main body.

4,259,551
EXTERNAL OPERATION DEVICE FOR ELECTRONIC TIMEPIECES

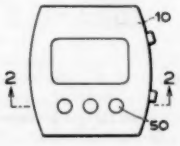
Akinobu Ohtani; Hideo Hatanaka, both of Higashimurayama, and Motoyuki Saito, Higashiyamato, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Mar. 14, 1979, Ser. No. 20,481

Claims priority, application Japan, Mar. 15, 1978, 53/29648; Aug. 22, 1978, 53/114276[U]

Int. Cl.[3] **H01H** *9/26, 9/04, 13/06*

U.S. Cl. 200—5 A **13 Claims**



1. An external operation device for electronic timepiece comprising a switch unit composed of a flexible switch cover having an externally actuated surface and a side wall and of a base body having a plate portion and shaft portion and fixed to said flexible switch cover, said externally actuated surface of said flexible switch cover being provided with switch electrodes and protrusions on its lower side, said protrusions partitioning said switch electrodes one from the other, said plate portion of said base body being provided with electrically conductive pattern on its upper surface corresponding to said switch electrodes, said switch unit being fitted through a waterproof packing to a through hole on a timepiece case by means of said shaft portion of said base body, and said electrically conductive pattern being connected to an internal module.

11. An external operation device for electronic timepiece comprising:

(a) a switch cover **(108)** received into a recess of a case band **(101)** and having a hole of form a flange portion at its inner periphery;

(b) a push button (**107**) operatively fitted into said hole of said switch cover (**108**) in such manner that an engaging portion of said push button is engaged with said flange portion of said switch cover (**108**) at the upmost position of said push button (**107**);

(c) a resilient insulating plate (**111**) arranged under said push button (**107**) within said switch cover (**108**) and having a protrusion opposed to the bottom of said push button ((**107**);

(d) a flat insulating plate (**109**) joined in the lower side of said resilient insulating plate (**111**) in a superimposed manner;

(e) switching electrodes (**115**) provided on a recessed wall in a side opposite to said protrusion;

(f) opposed electrodes provided on said flat insulating plate (**109**) in a manner to be opposed to said switching electrodes (**115**);

(g) a base plate (**106**) fitted to the lower side of said flat insulating plate (**109**) and having a conductive connector which is connected to a module (**102**) in said timepiece;

(h) a water-proof packing (**121**) disposed between said case band (**101**) and said base plate (**106**); and

(i) a retainer (**122**) disposed between said case band (**101**) and said base plate (**106**).

4,259,552

ELECTRIC SWITCHES

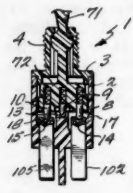
David A. Swann, P.O. Box 350, Mt. Waverley, Victoria, 3149, Australia

Continuation of Ser. No. 712,095, Aug. 5, 1976, abandoned. This application Apr. 19, 1978, Ser. No. 897,728

Claims priority, application Australia, Aug. 8, 1975, 2714/75

Int. Cl.³ H01H *21/00*

U.S. Cl. 200—6 R **6 Claims**



1. An electric switch of the type including a housing, an actuator moveably secured to said housing and having a portion controllably moveable along a predetermined path within said housing, at least first and second sets of electrical contacts respectively disposed in said housing along lines in accordance with said path, respective contact bridging members, one associated with each set of contacts, cooperating with said actuator portion to effect selective electrical connection of a first contact within each set with a second contact in the set, said respective first contact being adapted to operate as a fulcrum with respect to said associated bridging member, such that the bridging member pivots thereabout to selectively effect said connection; the improvement wherein:

said switch includes means for effecting said selective electrical connection in said first set of electrical contacts, prior to effecting said selective electrical connection in said second set of contacts; including

means cooperating with said bridging members, and said actuator portion for effecting a sliding movement of the associated bridging member over each first contact in response to movement of said actuator portion along said path;

respective means, associated with each said first contact and including at least one fulcrum edge of the first contact disposed relative to said associated second contact for defining the fulcrum, and hence, the position of said actuator portion along said path whereat said pivoting is effected; and

means for relatively offsetting in the direction of said path the fulcrum edge of the first contact of said first set with respect to the fulcrum edge of the first contact of the second set, such that said pivoting is effected in the first and second sets at differing positions of said actuator.

4,259,553

TRANSPORT HOSE WITH LEAK DETECTING STRUCTURE

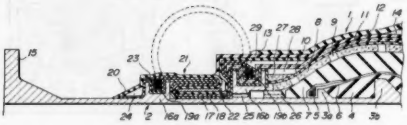
Mamoru Tanaka, and Hideaki Saito, both of Yokohama, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Jun. 13, 1979, Ser. No. 48,113

Claims priority, application Japan, Jun. 14, 1978, 53-71856

Int. Cl.³ H01H *35/24*

U.S. Cl. 200—81 R **6 Claims**



1. In a fluid transport hose comprising a hose main body including a reinforcing layer embedded therein and a metal fixture secured to the end of said hose main body, the improvement comprising; a passage composed of a continuous channel in a resilient body and arranged in said hose main body in the axial direction thereof and guiding leaking fluid from a transport line up to the end of said hose main body in its axial direction and a leak detector arranged at, at least one end of said passage and operative by said leaking fluid, said channel existing in said resilient body prior to any leaking fluid passing from said transport line to said channel.

4,259,554

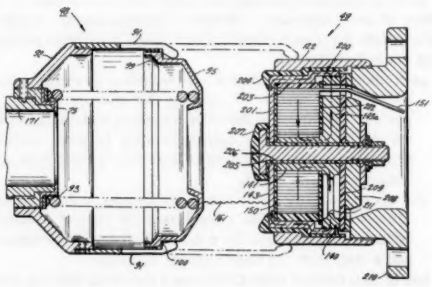
THIN ARC RUNNER FOR ARC SPINNER INTERRUPTER

Robert K. Smith, Lansdale, and Gerald A. Votta, King of Prussia, both of Pa., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Jan. 11, 1978, Ser. No. 868,623

Int. Cl.³ H01H *33/18*

U.S. Cl. 200—147 R **17 Claims**



1. A circuit interrupter comprising a stationary contact assembly; a movable contact assembly; a dielectric gas filled housing containing said stationary and movable contact assemblies; said stationary contact assembly including an arc runner contact and an electrical coil and circuit connection means for connecting said electrical coil in series with said arc runner contact; said arc runner contact containing, as at least a portion

thereof, a generally flat conductive disk having an axis which is coaxial with the axis of said coil; said coil being disposed adjacent one surface of said arc runner contact and being in a plane parallel to the plane of said arc runner contact and being closely magnetically coupled to said arc runner contact; said movable contact assembly including a generally cylindrical arcing contact which is coaxial with said arc runner contact, and which is movable into and out of contact with the surface of said arc runner contact which is opposite to said one surface; said arc runner contact having a thickness of less than about 0.285 inch, and said thickness being such as will produce maximum magnetic flux at arc current zero in a region adjacent said opposite surface of said arc runner contact due to the mutual coupling with said coil.

4,259,555

SELF-EXTINGUISHING GAS CIRCUIT INTERRUPTER

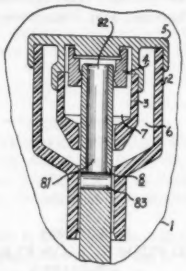
Masami Kii, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1978, Ser. No. 889,518

Claims priority, application Japan, Mar. 24, 1977, 52-32898; Mar. 24, 1977, 52-32908; Mar. 24, 1977, 52-32910; Mar. 24, 1977, 52-32913

Int. Cl.³ H01H *33/74*

U.S. Cl. 200—148 R **9 Claims**



1. A self-extinguishing gas circuit interrupter, comprising:

a casing for containing in use an arc extinguishing fluid;

means within said casing and comprising a first closure member for defining therein a first pressure chamber;

means within said first closure member and comprising a second closure member for defining therein a second pressure chamber within said first pressure chamber, wherein said first pressure chamber is defined between the exterior of said second closure member and the interior of said first closure member;

said first and said second closure members each having a respective hole therethrough with the respective holes aligned;

a pair of separable electrical contact elements, a first of said contact elements being elongated and extending through the respective holes through said first and second closure members and being dimensioned to close the respective holes through said first and second closure members when said first contact element extends through the pair of aligned holes and into said second closure member, the second of said contact elements disposed within said second closure member and in contact with said first contact element when said first contact element extends sufficiently far into said second closure member, wherein said second closure member is dimensioned to define said second pressure chamber having an interior larger than said first contact element to provide a space therebetween when said first contact element extends into said second pressure chamber and is in contact with said first contact element, and said first contact element being moveable to separate from said second contact element and open the respective holes through said first and second closure members; and

fluid control means in said moveable first contact element and cooperative with said first and second closure members for maintaining said pressure chambers substantially closed and retaining arc extinguishing fluid under pressure within said pressure chambers until said moveable first contact element has moved a predetermined distance from said second contact element, and for allowing fluid to flow therethrough from said pressure chambers into said casing after said moveable first contact element moves beyond the predetermined distance from said second contact element.

4,259,556

GAS PUFFER-TYPE CIRCUIT INTERRUPTER

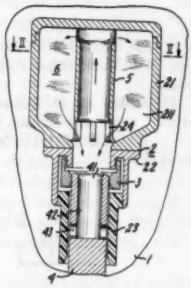
Masami Kii, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1978, Ser. No. 889,552

Claims priority, application Japan, Mar. 24, 1977, 52-32920; Mar. 24, 1977, 52-32923; Mar. 24, 1977, 52-32925

Int. Cl.³ H01H *33/74*

U.S. Cl. 200—148 R **6 Claims**



1. A circuit interrupter, comprising:

a casing for containing an arc extinguishing fluid;

means for defining an arc extinguishing chamber disposed within said casing and containing in use an arc extinguishing fluid, wherein said arc extinguishing chamber has an opening therethrough to permit arc extinguishing gas to be introduced into said arc extinguishing chamber;

a pair of separable contact elements disposed within said arc extinguishing chamber, wherein at least one of said contact elements is movable between a contacting position where said contact elements are in physical contact and separated positions where said contact elements are separated, and said movable contact element being positioned for blocking said opening through said arc extinguishing chamber when said movable contact element is in the contacting position.

a pressure chamber opening into said arc extinguishing chamber through said opening through said arc extinguishing chamber for permitting arc extinguishing fluid to be introduced from said pressure chamber into said arc extinguishing chamber when said movable contact element is separated a sufficient distance from the second of said contact elements and a pressure of arc extinguishing gas within said pressure chamber is sufficiently high;

a tubular cylinder within said pressure chamber having a first open end positioned for receiving high pressure high temperature gases generated in use within said said arc extinguishing chamber and which flow into said pressure chamber when said pair of contact elements are separated and an electric arc is established therebetween, and said tubular cylinder positioned with its second open end re-

mote from said opening through said arc extinguishing chamber for establishing a gas flow path out of said arc extinguishing chamber through said opening, into the first open end of said tubular cylinder, through said tubular cylinder and out of the second open end thereof, and back through said pressure chamber to said opening through said arc extinguishing chamber, said tubular cylinder being effective for guiding the high temperature high pressure arc extinguishing fluid from said arc extinguishing chamber for pressurizing low temperature arc extinguishing fluid within said pressure chamber without substantially heating the low temperature arc extinguishing fluid within said pressure chamber so as to puff low temperature arc extinguishing fluid under pressure from said pressure chamber into said arc extinguishing chamber when an arc current is sufficiently low so as to extinguish the arc formed between said contact elements when the same are separated; and

a plurality of partitions extending between said tubular cylinder and the interior wall of said pressure chamber for partitioning the interior of said pressure chamber into a plurality of compartments open adjacent both ends of said tubular cylinder for each defining a flow path for gas flowing out of said second open end of said tubular cylinder and back to said opening through said arc extinguishing chamber with low turbulence.

4,259,557

RECTANGULAR ELECTRIC CONTACT FOR SWITCH

Tetsuo Takano, 446 Tachihongo, Yatsuomachi, Nei-gun, Toyama-ken, Japan

Filed May 16, 1979, Ser. No. 39,599
Claims priority, application Japan, May 19, 1978, 53-58843
Int. Cl.³ H01H *1/06, 1/22*
U.S. Cl. 200—275 **4 Claims**

1. A rectangular electric contact for use in a switch, which comprises a base piece containing therein a rectangular through hole and a contact piece filling up said rectangular hole and having opposite end portions extending out of the upper and lower edges of said hole, said contact piece being cut from an elongate strip of material comprising at least two layers of dissimilar materials, and said contact piece having a uniform rectangular cross sectional shape from end to end and comprising at least two layers of dissimilar materials, said contact piece having a width equalling one of the sides of the rectangular holes and being cut from the elongate strip of material and substantially simultaneous therewith being insertion in the hole so that the uppermost layer thereof protrudes from the upper surface of said base piece and then substantially simultaneous with the inserted step being pressed in an axial direction of the hole to laterally expand the contact piece for tight fitting engagement in the hole, and the extended end portions having a rectangular shape which is somewhat greater than said rectangular hole and is similar in shape thereto.

4,259,558

MULTIPLE CANTILEVER SPRING CONTACT SWITCH

Stanley A. Croft, Nashville, Tenn.; Bruce I. Dolan, Nepean, and Pak-Jong Chu, Ottawa, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Aug. 17, 1979, Ser. No. 67,476
Int. Cl.³ H01H *1/26, 50/56*
U.S. Cl. 200—283 **16 Claims**

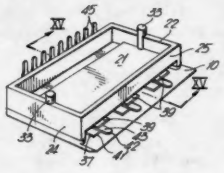
1. A multiple cantilever spring contact switch comprising:

a base and a top, each having a planar web, the webs spaced apart to define a contact enclosure;

a rim along one edge of each of said base and top, said rims in opposition;

clamping surfaces at said rims;

cantilever spring contact members clamped at one end between said clamping surfaces, said clamping surfaces inclined relative to each other whereby said contact members extend at different inclinations across said enclosure, electrically isolated from each other;



contact positions at free ends of said contact members, one of said contact members extended at said free end beyond said enclosure for actuation by an actuating member;

means for connecting an electrical conductor to each contact member; and

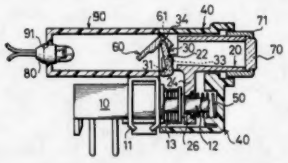
actuation of said extended contact member changing contact conditions between said contact members.

4,259,559

ILLUMINATED PUSH-BUTTON ELECTRICAL SWITCH ASSEMBLY

Shiro Kondo, and Masao Kumagai, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 139,713
Claims priority, application Japan, Apr. 19, 1979, 54/48290
Int. Cl.³ H01H *9/00*
U.S. Cl. 200—311 **5 Claims**

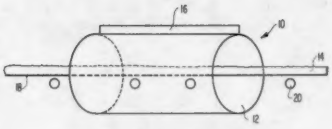


1. An illuminated push-button electrical switch assembly comprising: a casing having a manipulation member mounted slidably therein, said manipulating member having an arm portion adapted to engage a manipulation rod of a push-button switch for movement therewith; an indicating plate mounted to an exterior end portion of said manipulation member; a light source held on said casing for illuminating said indicating plate; and shutter means constituted by a filter member and a drive member, said filter member being rotatably journalled at its one end on said casing, said driving member having a free end adapted to contact said filter member at a portion of the latter in the vicinity of axis of rotation of said filter member, said driving member being rotatably supported at its intermediate portion by said manipulation member.

4,259,560
PROCESS FOR DRYING COAL AND OTHER CONDUCTIVE MATERIALS USING MICROWAVES

George W. Rhodes, 7921 Hendrix, NE., Alburquerque, N. Mex. 87110

Filed Sep. 21, 1977, Ser. No. 835,276
Int. Cl.[3] H05B 6/64
U.S. Cl. 219—10.55 M 10 Claims



1. A process for removing a polar liquid from a conductive aggregate, wherein said conductive aggregate is of the type which is susceptible to the production of free electrons which can be induced by microwave radiation, comprising the steps of:

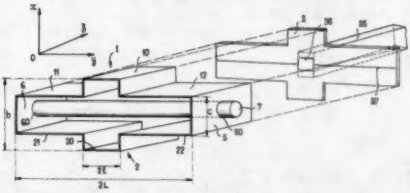
(a) reducing the size of the said conductive aggregate into fine particles which are smaller then the mean free path required to support arc formation at a predetermined microwave power level;

(b) subjecting said conductive aggregate to said predetermined microwave radiation, whereby said polar liquid is removed due to the motion induced in said liquid by said microwaves.

4,259,561
MICROWAVE APPLICATOR

Georges Roussy, Laxou; André-Jean Berteaud, Versailles, and Jean-Marie Thiebaut, Heillecourt, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), France

Filed May 1, 1978, Ser. No. 901,830
Claims priority, application France, May 6, 1977, 77 13903
Int. Cl.[3] H05B 6/70
U.S. Cl. 219—10.55 A 27 Claims

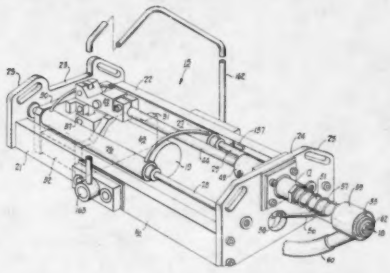


1. A microwave applicator comprising two main conductive walls extending parallel to a common axial direction and each having two lateral projections and a central part joining the two projections, the projections of the two walls facing one another in pairs whereas the central parts of the two walls likewise face one another and are transversely protruding away from each other to define a central expansion therebetween; a first conductive end wall forming a short-circuit and extending in a plane forming a cross-section of the main walls; a second conductive end wall forming a second short-circuit extending in a plane forming a cross-section of the main walls, sample holding means adapted to support a sample transversely within the applicator, and a coupling means for supplying microwave energy to the applicator, the dimensions of the cavity formed by the main and end walls being arranged so that the cavity resonates substantially in the TE_{11} mode, where the electric field is oriented along the cross-section of the main walls.

4,259,562
PORTABLE DISINTEGRATOR

Fred W. Cammann, and Jere H. Roach, Rocky River, Ohio, assignors to Cammann Manufacturing Company, Inc., Cleveland, Ohio

Filed Sep. 18, 1978, Ser. No. 943,007
Int. Cl.[3] B23P 1/00
U.S. Cl. 219—68 18 Claims



1. A metal disintegrator having a frame supporting a guide means with an aperture in the guide means to receive and axially guide an electrode relative to a workpiece, means to supply disintegrator current and coolant to at least a working end of the electrode, vibrator means to vibrate the electrode in advance and retract axial movements, and insulator means between the workpiece and electrode, the improvement comprising,

said guide means having a first portion for guiding the working end of the electrode and adapted to engage a first part of a workpiece closely adjacent the location of the workpiece contacted by axial movement of the electrode,

said frame being portable and having freedom of limited movement in two dimensions during operation of the disintegrator,

and annular coolant seal means in said guide means carried on said frame to have limited movement therewith, said coolant seal means having a curved surface cooperable with the workpiece and conformable thereto to inhibit coolant leakage therebetween despite slight movements in two dimensions of the disintegrator.

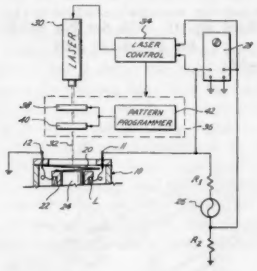
4,259,563
METHOD FOR DYNAMICALLY TUNING A SEISMIC TRANSDUCER

Paul E. Madeley, Houston, Tex., assignor to Litton Resources Systems, Inc., Houston, Tex.

Filed Mar. 19, 1979, Ser. No. 21,415
Int. Cl.[3] B23K 26/10, 26/08
U.S. Cl. 219—121 LJ 4 Claims

1. In a method for dynamically tuning the resonant frequency of a moving-coil motion transducer having a coil-supporting bobbin and a bobbin-suspending spring, exciting the transducer by applying an oscillatory driving signal to the coil, the signal having a frequency equal to a desired resonant frequency and monitoring the phase difference between the driving signal and the back emf induced in the coil, the improvement comprising the steps of:

directing a laser beam to continuously scan the bobbin-suspending spring to modify the elastic constant of the spring



until the phase difference is reduced to a predetermined level.

4,259,564

INTEGRATED THERMAL PRINTING HEAD AND METHOD OF MANUFACTURING THE SAME

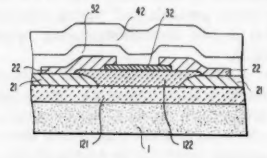
Toshio Ohkubo; Hidehiko Katoh, and Yuji Kajiwara, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 911,243, May 31, 1978. This application Aug. 15, 1979, Ser. No. 66,715

Claims priority, application Japan, May 31, 1977, 52-70965; Nov. 15, 1977, 52-153738

Int. Cl.[3] **H05B** *1/00*

U.S. Cl. 219—216 **4 Claims**



1. A thermal printing head comprising: a dielectric substrate; a plurality of thick-film lead electrode layers formed on said substrate and spaces from each other; an insulative layer means of low thermal conductive material filling spaces between said thick-film electrode layers; thin-film resistive layers formed on said insulative layer means; thin-film lead electrode layers formed on said insulative layer means and electrically connected to said thick-film lead electrode layers and the opposite ends of said resistive layers, respectively; and a protective dielectric layer formed over said resistive layers and said thin-film lead electrode layers.

4,259,565

METHOD OF CONTROLLING HEATERS FOR COPYING APPARATUS

Tetsuo Ogino, Nishinomiya; Takashi Sengo, Moriguchi, and Toshio Yoshiyama, Sakai, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed Sep. 5, 1979, Ser. No. 72,598

Claims priority, application Japan, Sep. 5, 1978, 53-109438

Int. Cl.[3] **H05B** *1/00;* **G03G** *15/20*

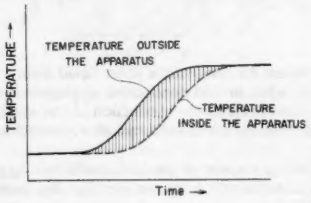
U.S. Cl. 219—216 **1 Claim**

1. A method of controlling heaters for a copying apparatus which indicates a first temperature detecting means for detecting the temperature within the copying apparatus, with a first reference temperature (T1) being set,

a second temperature detecting means for detecting the temperature within the copying apparartus, with a second reference temperature (T2) higher than said first reference temperature (T1) being set,

a humidity detecting means for detecting the humidity within the copying apparatus, with a reference humidity (H1) being set, and

a first group of heaters and a second group of heaters to be controlled by said temperature detecting means and said humidity detecting means, said method comprising the steps of;



(I) heating said first and second groups of heaters when the temperature within the copying apparatus is lower than the reference temperature (T1) of said first temperature detecting means, and

(II) heating said second group of heaters when the temperature (T) within the copying apparatus is higher than the reference temperature (T1) of said first temperature detecting means and lower than the reference temperature (T2) of said second temperature detecting means,

(II-a) with the humidity (H) within the copying apparatus being higher than the reference humidity (H1) of said humidity detecting means.

4,259,566

HAIR WAVING APPLICANCE HAVING PLURAL INDEPENDENTLY TEMPERATURE CONTROLLABLE ELECTRIC HEATERS

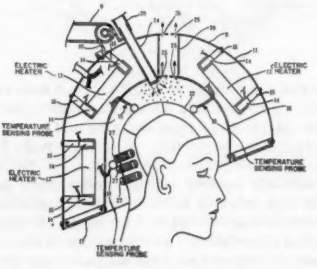
Takehiro Kobayashi, Sakai, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 4, 1978, Ser. No. 866,822

Claims priority, application Japan, Apr. 30, 1977, 52-56906

Int. Cl.[3] **H05B** *1/02;* **A45D** *20/40;* **H01C** *1/01*

U.S. Cl. 219—222 **16 Claims**



1. A hair waving appliance comprising:

(a) a head receiving and confining assembly;

(b) a plurality of independently controllable heating means provided within said head receiving and confining assembly for heating different hairline areas of the head received and confined therein; and

(c) a plurality of temperature sensing probes, each of said

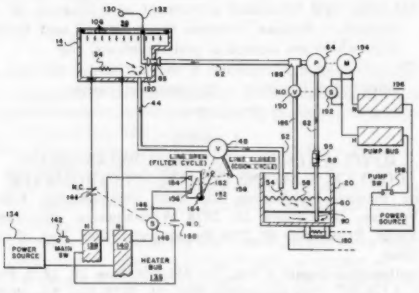
temperature sensing probes being associated with a respective independently controllable heating means and carrying a temperature sensitive element connected to a temperature control means for controlling the heating of said heating means, each of said temperature sensing probes extending into the interior of the head receiving and confining assembly and being arranged to contact the hair on different portions of the head received and confined in the assembly and being movably constructed to adapt to the curved surface of the hairline area of the head received in the head confining and receiving assembly.

4,259,567

POSITIVE RESET SAFETY CONTROL CIRCUIT FOR FRYING APPARATUS

L. Frank Moore, and George M. Price, both of Shreveport, La., assignors to The Frymaster Corporation, Shreveport, La.

Division of Ser. No. 753,936, Dec. 23, 1976. This application Oct. 20, 1978, Ser. No. 953,081
Int. Cl.³ H02H *11/00*
U.S. Cl. 219—327 **1 Claim**



1. A circuit for controlling the conduction of current from an electrical power source to the resistance heating element of a fry pot of the type having a drainage valve, the circuit comprising, in combination:

a first electrical bus for conducting electrical current;

an on-off switch connected to permit manual control of the conduction of electrical current from the power source to the first electrical bus;

a relay including a solenoid, a pair of normally open electrical contacts, and a pair of normally closed electrical contacts, the solenoid being operably connected to open the normally closed contacts and to close the normally open contacts in response to the flow of electrical current through the solenoid;

a safety switch having a pair of electrical contacts and a mechanical actuator operably coupled thereto for opening and closing the contacts in coordination with opening and closing movement of the drainage valve;

the electrical contacts of the safety switch being connected in series electrical relation between the first electrical bus and the solenoid;

the solenoid being connected in series electrical relation between the safety switch and the second electrical bus;

the normally closed contacts of the solenoid being connected in series electrical relation between the first electrical bus and the resistance heating element;

the normally open contacts of the solenoid being electrically connected in parallel circuit relation with the electrical contacts of the safety switch; and

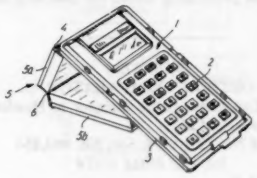
the resistance heating element being electrically connected in series electrical relation to the second electrical bus.

4,259,568

COMBINED CASING AND OPERATIONAL SUPPORT FOR A POCKET CALCULATOR

Henning Dynesen, Ega, Denmark, assignor to Henning Dynesen A/S, Ega, Denmark

Filed Oct. 12, 1979, Ser. No. 84,449
Int. Cl.³ G06C *5/02*
U.S. Cl. 235—1 D **18 Claims**



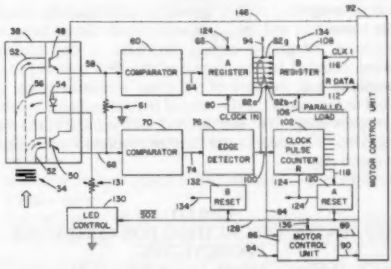
1. A casing for a pocket calculator or a similar apparatus having a visual display, said casing comprising a rectangular bottom and a rectangular cover suitable for the size of said pocket calculator and having raised side walls so as to enclose the pocket calculator completely in a closed condition of the casing, said bottom and said cover being connected through a hinge joint at one of their shorter sides, said cover comprising a first part located close to said hinge joint, and a second part having a greater length than the first part and being connected therewith through a further hinge joint, the axis of which is parallel to that of the first-mentioned hinge joint, the side walls of the cover and the bottom extending along said one short side being oblique and allowing the cover to be turned to an extreme position in which the cover projects below the bottom, said further hinge joint allowing the second cover part to be turned relative to the first cover part in the same direction as the turning of the first cover part relative to the bottom allowed by the first-mentioned hinge joint, mutually co-operating interlocking means being provided at the shorter side of the cover opposite the first-mentioned hinge joint and in the underside of the bottom for securing the second cover part relative to the bottom after turning of the two cover parts in said hinge joints.

4,259,569

CODE SENSING SYSTEM

Barry E. Passer, Ithaca, and George A. Sculley, Endicott, both of N.Y., assignors to NCR Corporation, Dayton, Ohio

Filed May 14, 1979, Ser. No. 39,002
Int. Cl.³ G06K *7/14, 13/07, 19/06*
U.S. Cl. 235—463 **20 Claims**



1. A system for processing indicia having a plurality of first and second coded symbols in a row comprising:

means for driving said indicia past a sensing member;

first means operative to sense each of the first and second coded symbols of the indicia and to generate first electri-

cal signals representing the first coded symbols and second electrical signals representing the second coded symbols;

first signal processing means for processing said first and second electrical signals in a predetermined manner;

and logic means responsive to the processing of said first electrical signal for enabling said driving means and responsive to the processing of said second electrical signals by said signal processing means for disabling said driving means.

4,259,570

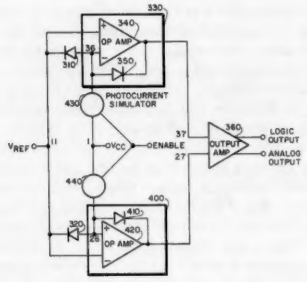
OPTICAL COMPARATOR

Mark Leonard, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 27, 1978, Ser. No. 963,854

Int. Cl.³ H01J *40/14*

U.S. Cl. 250—214 A **9 Claims**



1. An optical comparator for comparing first and second light signals comprising:

a first optical detector positioned to receive the first light signal having a first light sensitive area and an output for providing a first electrical signal in response to light received at the first light sensitive area;

a second optical detector positioned to receive the second lighty signal having a second light sensitive area and an output for providing a second electrical signal in response to light received at the second light sensitive area;

first and second transimpedance amplifiers having inputs coupled to the outputs of the first and second optical detectors respectively, each having an output and each having an integrated circuit diode as the feedback element therein for producing first and second output signals in response to the first and second electrical signals respectively;

a pair of integrated circuit transistors differentially coupled, the transistors and the integrated circuit diodes being on a common integrated circuit, the base of one transistor being coupled to the output of the first transimpedance amplifier and the base of the other transistor being coupled to the output of the second transimpedance amplifier for providing first and second differential comparison signals in response to the first and second output signals respectively.

4,259,571

APPARATUS AND METHOD FOR CONTAINER RECOGNITION

Gregory T. Dubberly, Atlanta, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed May 25, 1979, Ser. No. 42,468

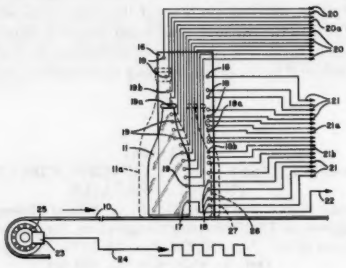
Int. Cl.³ B07C *5/10*; G06M *7/00*

U.S. Cl. 250—223 B **16 Claims**

13. The method of recognizing a container comprising the steps of:

(1) transporting said container along a generally horizontal path,

(2) sensing the approach of the leading edge of said container at two different elevations along said path and generating transition signals when the leading edge passes predetermined points at said elevations,



(3) sensing the horizontal movement of said container during the time between generation of said transition signals,

(4) using said horizontal movement as a measure of the horizontal distance between the points of said leading edge which are located at said elevations, and

(5) indicating a recognition if the horizontal measure, so determined, is within a predetermined range.

4,259,572

IONIZATION OF ORGANIC SUBSTANCES ON CONVEYOR MEANS IN MASS SPECTROMETER

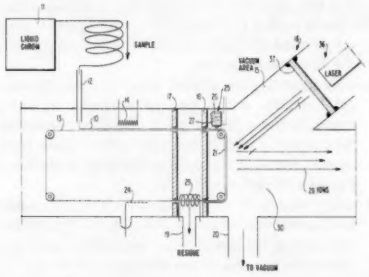
Curt Brunnee, Birkenweg 24, 2820 Platjenwerbe; Jochen Franzen, Backskamp 24, 2878 Wildenhausen, and Stefan Meier, Reinstrasse 68, 2800 Bremen, all of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 855,579, Nov. 29, 1977, Pat. No. 4,178,507. This application May 16, 1979, Ser. No. 39,478

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1976, 2654057

Int. Cl.³ H01J *27/00*; B01D *59/44*

U.S. Cl. 250—281 **2 Claims**



1. A method for analyzing samples of substances in a solution obtained by a liquid chromatograph in a mass spectrometer comprising the steps of:

transferring a sample of substance to be analyzed in a solution medium from a light chromatograph onto a moving continuous transport belt;

vaporizing the solution medium to leave the substance on the belt;

moving the belt so as to move the substance into a vacuum environment of an ionization chamber associated with said mass spectrometer;

ionizing the sample directly on the moving belt in the ionization chamber by laser bombardment; and

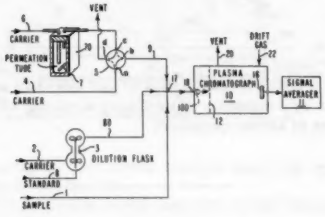
removing the ions from the belt and conducting them into the mass spectrometer.

4,259,573

METHOD OF DETERMINING SMALL CONCENTRATIONS OF CHEMICAL COMPOUNDS BY PLASMA CHROMATOGRAPHY

James M. Prober, and Rudy J. Dam, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 5, 1979, Ser. No. 90,914
Int. Cl.³ B01D *59/44*
U.S. Cl. 250—287 **8 Claims**



6. Apparatus for the determination of a concentration, C_A, of an ionizable species A in a gas sample by plasma chromatography, said apparatus comprising:

(A) a plasma chromatograph drift tube having a gas inlet, a gas outlet, an ion source close to the gas inlet, a shutter grid, and an ion collector, said collector being connected to a means for measuring ion current flowing through the drift tube;

(B) a means for introducing into said drift tube a gas sample containing an unknown concentration of species A;

(C) a means for introducing into said drift tube known, discrete amounts of one or more calibrant species in a carrier gas, both in the absence and in the presence of the gas sample containing an unknown concentration of species A;

(D) a means for accurately standardizing the concentration of the calibrant species in the carrier gas;

(E) a means for introducing into the drift tube the carrier gas alone;

(F) a means for maintaining controlled flows of all gases entering the drift tube;

(G) a means for purging the drift tube with carrier gas alone between ion current measurements, and a means for introducing into the drift tube one or more of any desired calibrant species and unknown gas samples in any order;

(H) a means for obtaining and recording data correlating the plasma chromatograph ion current with the ion mobility or drift time of ions formed by the species of interest and by calibrant species.

4,259,574

MICROANALYSIS BY PULSE LASER EMISSION SPECTROSCOPY

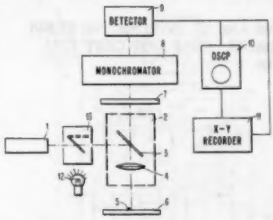
Timothy W. Carr, Poughkeepsie, and Howard A. Froot, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 6, 1979, Ser. No. 91,855
Int. Cl.³ G09K *3/00*
U.S. Cl. 250—302 **18 Claims**

1. System for identifying the composition of a material subjected to at least one stage of processing in a manufacturing line, comprising:

means for providing a record of known decay rates of the molecular fluorescence, from the excited to a lower energy state, of said material of acceptable modification thereof at the end of each stage of processing,

means at the end of each state of processing for laser irradiating said material to induce molecular fluorescence thereof,



means for detecting the decay rate of said induced fluorescence, and

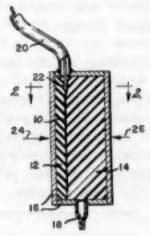
means for comparing said detected decay rate with said record to determine the state of modification of each material.

4,259,575

DIRECTIONAL GAMMA DETECTOR

Francis E. LeVert, Knoxville, Tenn., and Samson A. Cox, Downers Grove, IL, assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Apr. 4, 1980, Ser. No. 137,095
Int. Cl.³ G01J *1/00*; G01T *1/22*
U.S. Cl. 250—336 **10 Claims**



1. A directional detector of gamma rays comprising:

an electrically conductive collector having first and second surfaces;

at least one emitter which emits electrons upon exposure to gamma rays;

a first insulator of predetermined resistance disposed between said first surface of said collector and said emitter;

a second insulator disposed between said second surface of said collector and said emitter, said second insulator having a resistance greater than the resistance of said first insulator;

means for completing an electrical circuit between said emitter and said collector; and

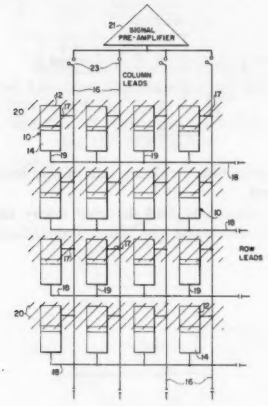
means for measuring the electric current in the circuit.

4,259,576

ANTI-BLOOMING SHIELD FOR TWO-DIMENSIONAL CHARGE-INJECTION DEVICES

C. John Gridley, Silver Spring, and Donald L. Weinberg, Oxon Hill, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 17, 1979, Ser. No. 67,646
Int. Cl.[3] G01J *1/00*; G01T *1/22*
U.S. Cl. 250—338 **5 Claims**



1. In an improved two-dimensional infra-red detector array including a plurality of aligned detector elements arranged in rows and columns in which each detector element includes a pair of spaced x- and y-electrodes defining respective potential wells within the detector elements, the array having means for simultaneously transferring any signal charge stored in the potential wells at all of the x-electrodes in any row of the array to the respective potential wells at the associated y-electrodes, and for thereafter simultaneously reading out any signal charge stored in the potential wells at all of the y-electrodes in any column of the array, the improvement comprising:

an infra-red opaque layer covering the y-electrode of each detector element of said detector array to prevent accumulation of signal charge in the potential wells at the y-electrodes when the array is irradiated by infra-red light, while permitting accumulation of signal charge in the potential wells at the x-electrodes, so that signal charge accumulated in the potential well at a given x-electrode can be transferred to the potential well at the associated y-electrode and thereafter read out from the potential well at the associated y-electrode without an accompanying spurious output from the potential wells of other y-electrodes in the same column.

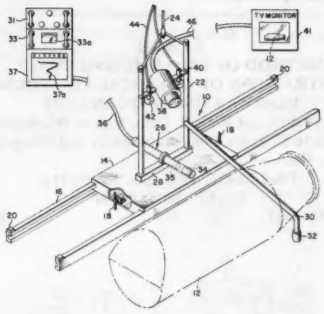
4,259,577

METHOD AND MEANS FOR PREDICTING CONTENTS OF CONTAINERS

John J. Jakosky, Jr., and John J. Jakosky, both of Newport Beach, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 4, 1960, Ser. No. 26,918
Int. Cl.[3] G01N *23/00, 23/20*
U.S. Cl. 250—358 R **1 Claim**

1. A method for detecting and differentiating between containers of submerged junk and explosive-filled mines in demolition operations, comprising the steps of subjecting an unknown submerged container under surveillance to a gamma radiation source, traversing said submerged container with said source along a standard diagnostic path, detecting the changes in intensity of the radiation penetrating the submerged container, and recording the variations of intensity of said radiation penetrating the submerged container along said path to obtain a density signature of said submerged container and contents



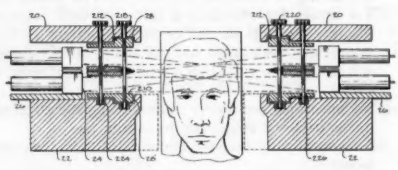
enabling a positive identification of said unknown submerged container by comparison of its density signature with density signatures of known containers.

4,259,578

MOVABLE COLLIMATOR FOR POSITRON ANNIHILATION IMAGING DEVICE

Christopher J. Thompson, 11870 Lavigne, Montreal, Quebec, Canada (H4J 1X8)

Filed Aug. 27, 1979, Ser. No. 70,068
Int. Cl.[3] G01T *1/20*; G01N *21/00*
U.S. Cl. 250—363 S **7 Claims**



1. A positron annihilation imaging device comprising:

(a) a first array of n detectors disposed in a first plane around an axis of symmetry, the detectors of said first array being equally spaced apart by a selected space;

(b) a second array of detectors of the same number as for the first array of detectors, the detectors of said second array being disposed coaxially with said first array of detectors and in a second plane separated from said first plane, the detectors of said second array of detectors being equally spaced apart by the same selected space, the detectors of said second array of detectors being staggered from the detectors of said first array of detectors by a distance substantially equal to half the selected space;

(c) fixed first and second shield means disposed outside said arrays of detectors, said shield means having a flat configuration;

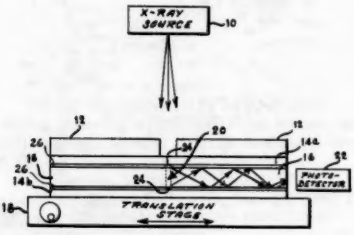
(d) first and second outer collimator elements of flat configuration, said collimator elements being disposed between said fixed shield means and the associated array of detectors and in planes parallel therewith said first and second outer collimator elements being selectively adjustable along said axis of symmetry; and

(e) a central collimator of flat configuration disposed between said first and second planes.

4,259,579
WAVEGUIDE LINE SPREAD FUNCTION ANALYZING APPARATUS

Joseph M. Geary, Edgewood, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 1, 1979, Ser. No. 90,384
Int. Cl.³ G01T 1/20
U.S. Cl. 250—368 **5 Claims**



1. A waveguide line spread function analyzing apparatus comprising in combination:

means for generating x-rays, said x-ray means having a narrow focal spot,

a lead shield having a slit therein, said slit having a predetermined width,

a slab optical waveguide having a first and second window therein, said first and second window being directly opposite each other, said first and second windows having the same dimensions, said first and second windows having a window width much smaller than said slit,

a first and second intensifying screen positioned on said slab optical waveguide so as to form a sandwich, said first intensifying screen being on top of said waveguide and said second intensifying screen being on the bottom of said waveguide, said first and second window being optically aligned with said slit and said x-ray means, said x-ray means irradiating said first and second intensifying screens through said slit, said first and second intensifying screens generating fluorescent light in response to said x-rays, said fluorescent light entering said waveguide through said first and second windows, and,

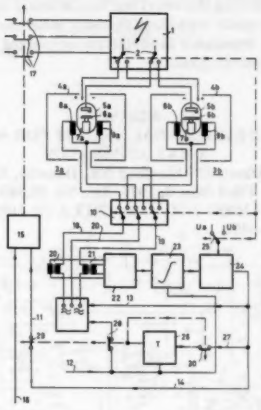
a photodetector positioned at one end of said waveguide to receive said fluorescent light that was channeled through said waveguide, said photo-detector measuring the intensity of said fluorescent light.

4,259,580
CONTROL CIRCUIT FOR A ROTARY-ANODE X-RAY TUBE

Gerd Vogler, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 22, 1978, Ser. No. 917,976
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 2732852
Int. Cl.³ H05G 1/70
U.S. Cl. 250—402 **8 Claims**

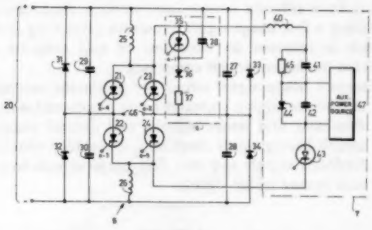
1. In a circuit for initiating operation of an X-ray generator including a rotary anode X-ray tube and means for switching the X-ray tube on and off, the improvement comprising, a rotary anode drive motor that includes a rotor coupled to the rotary anode and first and second stator windings disposed at right angles about the axis of rotation of the rotary anode, means for sensing starting currents i_1 and i_2 flowing in the respective first and second stator windings, an arithmetic device having an input coupled to the output of the current sensing means and including means for deriving an output signal which is proportional to the time integral of a product $I_1 \cdot I_2 \sin \alpha$, I_1 and I_2 being the amplitudes of the stator winding currents i_1 and i_2, respectively and α being the phase angle between the two stator currents i_1 and i_2, means for applying said output signal to a first input of a comparison circuit, means for supplying a preset reference value signal indicative of a minimum required anode speed to a second input of the comparison circuit such that the comparison circuit produces an output control signal if the output signal of the arithmetic device exceeds the preset reference value signal, and means coupling the output control signal of the comparison circuit to the switching means for enabling an X-ray exposure.



4,259,581
HIGH-POWER DIAGNOSTICAL X-RAY EQUIPMENT WITH THYRISTOR CONVERTER

Peter Csontos; László Henter; László Kálman; Tibor Kondor, and Istvan Wein, all of Budapest, Hungary, assignors to Medicor Müvek, Budapest, Hungary

Filed Apr. 4, 1979, Ser. No. 26,885
Claims priority, application Hungary, Apr. 5, 1978, ME 2156
Int. Cl.³ H05G 1/00
U.S. Cl. 250—402 **7 Claims**



1. A circuit arrangement for the controlled energization of diagnostic X-ray equipment with alternating current, comprising:

a supply of direct current provided with a pair of output terminals;

an inverter including a bridge with four switching thyristors in respective arms thereof defining a DC input diagonal and an AC output diagonal;

inductance means connected in series with said input diagonal across said terminals;

a set of four commutating capacitors inserted between said terminals and opposite ends of said output diagonal;

an ancillary thyristor connected in series with a current-limiting impedance across one of said switching thyristors; and

control means for alternately firing diagonally opposite pairs of said switching thyristors to the exclusion of said ancillary thyristor in respective halves of a succession of operating periods following a first half-period in which said ancillary thyristor is fired to the exclusion of said one of said switching thyristors but concurrently with the diagonally opposite switching thyristor whereby said current-limiting impedance is effectively connected in series with said output diagonal.

4,259,582

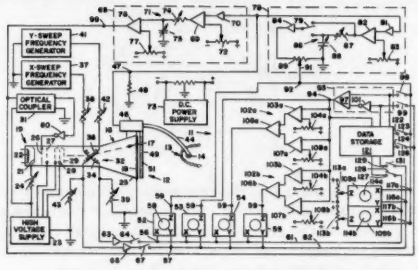
PLURAL IMAGE SIGNAL SYSTEM FOR SCANNING X-RAY APPARATUS

Richard D. Albert, 317 Hartford Rd., Danville, Calif. 94526

Filed Nov. 2, 1979, Ser. No. 90,540

Int. Cl.[3] **H05G** *1/00, 1/30;* **G01T** *1/00;* **H04N** *5/32*

U.S. Cl. 250—402 **15 Claims**



1. A signal processing system for scanning x-ray apparatus which has an x-ray source producing a moving x-ray origin point and which has at least one x-ray detector for disposition at the opposite side of a subject to be scanned to produce detector signals from which radiographic images may be derived, the system including feedback circuit means coupled between said detector and said source for generating a feedback signal which regulates said source to maintain the average value of said detector signals substantially constant while enabling brief variations of said detector signals in response to scanning across boundaries between regions of said subject which have different x-ray transmissivities, the system further including a first image signal circuit for producing first image signals in response to variations of said detector signals, wherein the improvement comprises:

a second image signal circuit for producing second image signals containing a greater range of contrast information than said first image signals, said second image signal circuit having signal combining means for combining said feedback signals and said first image signals to produce said second image signals.

4,259,583

IMAGE REGION SELECTOR FOR A SCANNING X-RAY SYSTEM

Richard D. Albert, 317 Hartford Rd., Danville, Calif. 94526

Filed May 3, 1979, Ser. No. 35,437

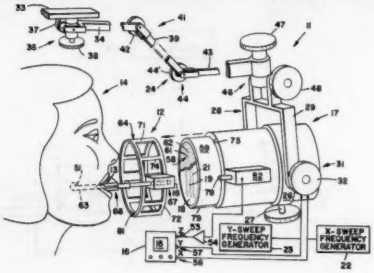
Int. Cl.[3] **A61B** *6/08, 6/14*

U.S. Cl. 250—416 TV **19 Claims**

1. An image region selector for a scanning X-ray radiographic system in which an X-ray source and a collimator are disposed at one side of a region to be imaged, the source having a moving X-ray origin point which is swept through a raster pattern area and the collimator having a plurality of passages for transmitting X rays from different portions of said raster pattern area towards said region to be imaged, and in which at least one radiation detector is disposed at the opposite side of said region in the path of said X rays which are transmitted through said collimator passages, wherein the improvement comprises:

detector support means for supporting said detector at a selected position at said opposite side of said region prior to movement of said X-ray source into position for producing the desired image data,

collimator positioning means for defining a predetermined collimator position which is spaced apart from said detector and at which said collimator passages are directed



towards said detector, said collimator positioning means being secured to said detector support means in a predetermined spatial relationship to said detector, and

selector support means for immobilizing said image region selector at a selected position and orientation relative to said region to be imaged, said selector support means being independent of said X-ray source in order to support said selector prior to movement of said X-ray source into position for making a radiographic image of said region.

4,259,584

APPARATUS FOR TRANSMITTING SIGNALS

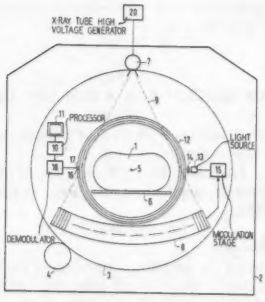
Hans J. Krumme, Uttenreuth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 24, 1979, Ser. No. 78,052

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1978, 2846526

Int. Cl.[3] **G03B** *41/16*

U.S. Cl. 250—445 T **8 Claims**



1. A tomographic scanning apparatus for producing transverse layer images, comprising a measuring arrangement including an x-ray source (7) and a radiation receiver (8), a rotatable support (3) carrying the measuring arrangement so that the radiography subject (1) can be scanned at different projections by means of an x-ray radiation beam (9) emitted from the x-ray source (7), the thickness of which perpendicular to the plane of the layer to be examined being equal to the

thickness of the layer, and a data processing device (10) for determining an image of the examined layer from the signals supplied by the radiation receiver (8), characterized in that an arcuate light guide made of light conductive material is curved about the center of rotation of the measuring arrangement and provides for a continuous signal coupling between rotating and stationary parts of the apparatus throughout the angular range of rotation required to effect a tomographic scanning operation, whereby the measuring arrangement can be rotating at constant speed prior to initiation of a scanning operation.

4,259,585

X-RAY EXAMINATION APPARATUS

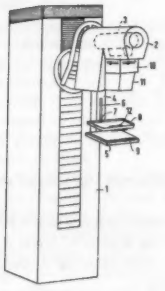
Robert Novak, Amorvägen 8, 18146 Lidingö, Sweden, and Kjell Ytterfalk, Spanga, Sweden, assignors to Robert Novak, Lidingö, Sweden

Filed Nov. 17, 1978, Ser. No. 961,732

Claims priority, application Sweden, Nov. 28, 1977, 7753047

Int. Cl.[3] **G01N** *21/00, 23/00;* **H01J** *37/20*

U.S. Cl. 250—456 **11 Claims**



1. X-ray examination apparatus for the female breast comprising an X-ray source and a breast support plate onto which an X-ray film cassette can be mounted, wherein a compression plate is mounted parallel to the breast support plate between the X-ray source and the breast support plate which compression plate is adjustable relative to the breast support plate for the purpose of adjusting its distance from the breast support plate, wherein the improvement comprises the compression plate (8) having an open section (12) of such a size that a substantial portion of the breast is left exposed, and a marking (13,14) being arranged at the margin of the open section, reproducible on an X-ray film, for the purpose of locating a specified point in the open section, said open section comprising an opening completely through the compression plate and having dimensions in the plane of said compression plate which are substantially greater than the depth of said opening, such dimensions being such as to accommodate the application of a biopsy needle through said opening at any of a series of locations over a substantial area of said opening as identified by said marking, whereby the opening need not be precisely aligned during the application of the compression plate for the fixation of the region of the breast under examination, and whereby subsequent to such fixation, the markings reproduced on the film will serve to identify the particular point over the area of said opening at which the biopsy needle is to be applied, the region above and below said opening being entirely unobstructed to provide for the application of a biopsy needle directly to the tissue framed by the opening without any interposed material.

4,259,586

CASSETTE FOR X-RAY FILM

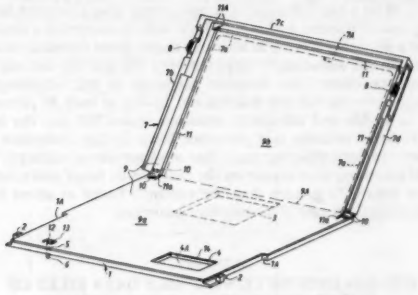
Manfred Schmidt, and Heinrich Färber, both of Munich, Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Oct. 6, 1978, Ser. No. 949,138

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 2746032

Int. Cl.[3] **G03C** *5/16*

U.S. Cl. 250—481 **24 Claims**



1. A container for X-ray film, comprising a rigid housing including a first and a second section, said sections being movable with respect to each other between overlapping and open positions; and a flexible foil having first and second portions respectively affixed to and substantially coextensive with said first and second sections and constituting an internal lining of said housing, and a light-intercepting third portion disposed intermediate said first and second portions of said foil and constituting a hinge about which said sections of said housing are movable between said open and overlapping positions.

4,259,587

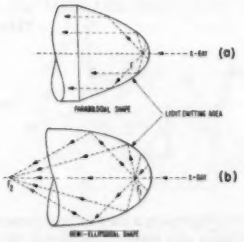
X-RAY LUMINESCENT GLASSES

Tatsuo Takahashi, Kanagawa, and Osamu Yamada, Tokyo, both of Japan, assignors to RCA Corporation, New York, N.Y.

Filed Oct. 9, 1979, Ser. No. 82,532

Int. Cl.[3] **G01J** *1/58;* **G01N** *21/64*

U.S. Cl. 250—486 **23 Claims**



12. An X-ray radiation detector comprising:

a photomultiplier tube, and a glass abutting said photomultiplier tube having the composition

$$n(MO{\cdot}P_2O_5)[(1-y)Tb_2O_3{\cdot}yCe_2O_3{\cdot}3P_2O_5]$$

wherein n is greater than zero but less than or equal to 16 and y is less than one but greater than or equal to zero, and M is a divalent cation, said glass disposed on said photomultiplier tube so as to permit said photomultiplier to collect the light

emitted by said glass upon the illumination of said glass with X-rays.

4,259,588

GREEN-EMITTING X-RAY INTENSIFYING SCREENS

George W. Luckey, Rochester, and Henry M. Cleare, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 31, 1979, Ser. No. 89,785
Int. Cl.[3] G01J *1/58*
U.S. Cl. 250—483 9 Claims

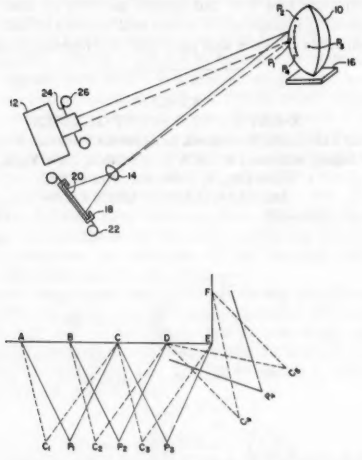
1. In an x-ray intensifying screen comprising a support having coated thereon a phosphor layer which comprises a binder and a phosphor having at least one major green emission maximum in the wavelength range between 500 and 600 nm and at least one major blue emission maximum in the wavelength range between 300 and 500 nm and having at least 30 percent of its visible and ultraviolet emission above 500 nm, the improvement wherein said phosphor layer further comprises at least one light absorber such that at about the wavelength of said green emission maximum the radiance factor of said screen is at least 0.10 greater than the radiance factor at about the wavelength of said blue emission maximum.

4,259,589

GENERATION OF CONTIGUOUS DATA FILES OF THREE-DIMENSIONAL INFORMATION

Paul DiMatteo, Huntington, and Howard Stern, Greenlawn, both of N.Y., assignors to Solid Photography, Inc., Melville, N.Y.

Filed Jul. 20, 1979, Ser. No. 59,158
Int. Cl.[3] G01B *11/00*
U.S. Cl. 250—558 11 Claims



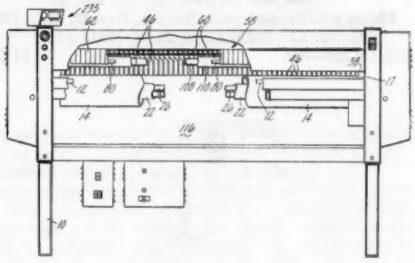
1. A method for developing a data bank representative of the surface characteristics of a three-dimensional object, comprising defining a first projection field extending from a first location and including a part of said surface; irradiating portions of said part by projecting radiant energy from said first location into first predetermined segments of said first projection field; irradiating portions of said first part by projecting radiant energy from said first location into second predetermined segments of said first projection field, said second segments being of different orientation than that of said first segments; and making separate data files from at least two positions, containing records of such irradiated object portions in a succession corresponding to the irradiating succession; the field of view from each of said two positions including an overlapping area; whereby common points within said separate data files can be compared to coordinate said files with each other to effect merger thereof into a data bank representative of the surface characteristics of the field of view from each said position.

4,259,590

AREA MEASURING MACHINE

Roy Morris, and Terence J. Pickering, both of Scarborough, England, assignors to USM Corporation, Farmington, Conn.

Filed Feb. 7, 1979, Ser. No. 10,133
Claims priority, application United Kingdom, Feb. 9, 1978, 5180/78
Int. Cl.[3] G01N *21/86*
U.S. Cl. 250—560 10 Claims



1. A machine for measuring the area of sheet material, said machine comprising:

conveyor means comprising a conveyor surface for supporting sheet material the area of which is to be measured and for conveying the sheet material through said machine in the operation thereof;

a plurality of wheels disposed side by side across said machine and arranged to run on sheet material conveyed by said conveyor means or, in the absence of sheet material, on said conveyor surface;

detecting means, one associated with each wheel for detecting the presence of a piece of sheet material between each wheel and said conveyor surface;

signalling means for signalling each time the periphery of a wheel has been rotated through a unit distance and for emitting a signal to be summed should the output from said detecting means associated with that wheel indicate that a piece of sheet material is present between the wheel and the conveyor surface;

computing means for summing the signals from each wheel to indicate the area of the piece of sheet material;

means arranged to emit a test start signal; and

test means so constructed and arranged that upon receipt of the test start signal, test signals are fed to said computing means of said machine until said computing means registers a predetermined number, whereupon a stop signal is emitted, said test means comprising a duplicate summing means to which the test signals are also fed until the stop signal is emitted, said test means further comprising a comparator by which the number of signals recorded by said duplicate summing means is compared with the predetermined number, said test means being so constructed and arranged as to indicate a fault should the number registered by said duplicate summing means differ by more than a predetermined tolerance from the predetermined number.

4,259,591
AREA MEASURING MACHINE

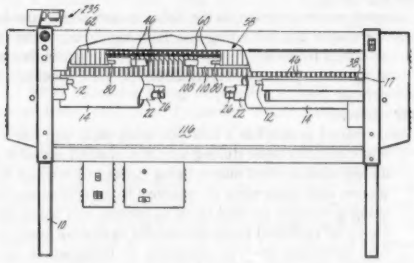
Roy Morris, and Terence J. Pickering, both of Scarborough, England, assignors to USM Corporation, Farmington, Conn.

Filed Feb. 7, 1979, Ser. No. 10,134

Claims priority, application United Kingdom, Feb. 9, 1978, 5182/78

Int. Cl.[3] **G01N** *21/86*

U.S. Cl. 250—560 **9 Claims**



1. A machine for measuring the area of sheet material, said machine comprising:

conveyor means comprising a conveyor surface for supporting sheet material the area of which is to be measured and for conveying the sheet material through said machine in the operation thereof;

a plurality of wheels disposed side by side across the machine and arranged to run on sheet material conveyed by said conveyor means or, in the absence of sheet material, on said conveyor surface;

detecting means, one associated with each wheel for detecting the presence of a piece of sheet material between each wheel and said conveyor surface;

signalling means for signalling each time the periphery of a wheel has been rotated through a unit distance and for emitting a signal to be summed should the output from said detecting means associated with that wheel indicate that a piece of sheet material is present between the wheel and the conveyor surface;

computing means for summing the signals from each wheel to indicate the area of a piece of sheet material;

means arranged to emit a test start signal; and

test means actuated by the test start signal to cause, in the absence of sheet material, all of the detecting means to emit a signal, which would normally indicate the presence of sheet material, for a predetermined period of sufficient length that, at the speed of the conveyor surface, the signalling means should have generated at least one test satisfactory signal in respect of each wheel and its associated detecting means which is functioning correctly, said at least one test satisfactory signal being received by said test means, said test means being so constructed and arranged to indicate if a test satisfactory signal should fail to be received in respect of any one of the wheels and its associated detecting means.

4,259,592
CEILOMETRIC METHOD AND APPARATUS

Frank Früngel, im Glockenacker 2, 8053 Zürich, Switzerland, and Martin Spies, Pfaffenhofen, Fed. Rep. of Germany, assignors to Frank Früngel, Zürich, Switzerland

Filed Jul. 30, 1979, Ser. No. 61,991

Claims priority, application Switzerland, Aug. 3, 1978, 272/78

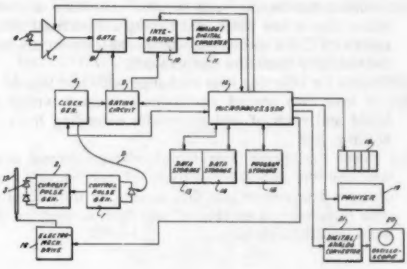
Int. Cl.[3] **G01N** *15/06*

U.S. Cl. 250—574 **25 Claims**

1. A ceilometric method comprising the steps of

emitting light pulses from a transmitter upwards towards overhead clouds for reflection downwards back onto a receiver comprising a photodetector generating a photodetector signal,

transmitting the photodetector signal to an integrator during a gating interval, the time between a pulse emission and the start and end of the gating interval establishing the size and the distance from the transmitter and receiver of a ceilometric range step to be explored, and shifting the gating interval in time relative to the time of pulse emission so as to explore successive ceilometric range steps within a predetermined ceilometric range, the time between a pulse emission and the gating interval being maintained constant for a plurality of pulse emissions to allow



a build-up of the integrated photodetector signal associated with that range step before proceeding on to the next range step,

applying the photodetector integral signal developed for each range step to an analog-to-digital converter and writing the digitalized versions of the photodetector integral signals into digital storage circuit means ordered in the digital storage circuit means in correspondence to the sequence of the respective range steps,

and generating an indication of ceiling using means operative for ascertaining the largest integral signal stored in the digital storage circuit means.

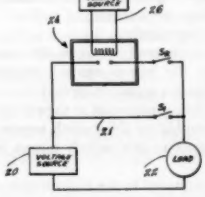
4,259,593
HIGH VOLTAGE CONTROL DEVICES

Joseph M. Proud, Wellesley Hills; James M. Auborn, Groton, both of Mass., and R. A. Bessett, Derry, N.H., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Division of Ser. No. 661,677, Feb. 26, 1976, Pat. No. 4,185,206. This application Aug. 25, 1978, Ser. No. 936,971

Int. Cl.[3] **H01B** *1/06;* **H01H** *29/06, 33/68*

U.S. Cl. 307—117 **5 Claims**



1. In an elecrical system having a voltage source and a load connected through a power bus including a first circuit breaker, an improved fault current limiting circuit connected in parallel with said first circuit breaker comprising

a second circuit breaker in series with a high voltage control device,

said high voltage control device comprising

(a) a housing;

(b) an aprotic liquid contained within said housing, said aprotic liquid

(1) at low fields, having a specific resistivity which decreases with increasing temperature according to an exponential dependence characteristic of semiconductors, and having a first fixed specific resistivity A at a first predetermined temperature below the viscosity transistion temperature,

(2) at high fields, below the viscosity transition temperature, having a specific resistivity markedly lower than that at low fields, and having a second fixed specific resistivity 1 at said first predetermined temperature, and

(3) at high fields, above the viscosity transition temperature, having a specific resistivity substantially higher than that at the same high fields below the viscosity transition temperation, but having such specific resistivity at a value below that at low fields, and having a third fixed specific resistivity C at a second predetermined temperature above the viscosity transition temperature,

(c) means for effecting heat exchange with said liquid,

(d) at least two spaced electrodes contained within said liquid and each of said electrodes extending from said housing, and

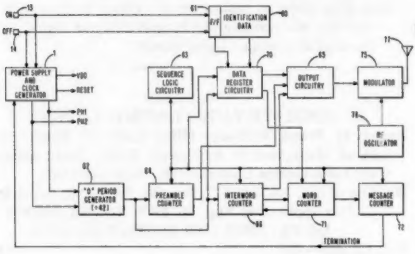
(e) means for operating said high voltage control device whereby the specific resistivity of said aprotic liquid changes from one of said first, second, or third fixed specific resistivity to another of said first, second, or third fixed specific resistivity.

4,259,594

ELECTRICAL POWER SUPPLY APPARATUS

Jeffrey R. Fox, Concord; Arthur Margolies, Ashland, and Rob Moolenbeek, Dover, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Sep. 17, 1979, Ser. No. 75,783
Int. Cl.[3] H01H *43/00*
U.S. Cl. 307—141 **7 Claims**



1. Electrical power supply apparatus comprising

a source of electrical potential;

a power output terminal;

switch means connected between the source of electrical potential and the power output terminal and operable when an activating signal is applied thereto to connect the source of electrical potential to the power output terminal;

input means coupled to the switch means for applying an activating signal to the switch means in response to an input signal;

latching means coupled to the input means and to the switch means for producing an activating signal to the switch means in response to the input signal and for maintaining the activating signal to the switch means subsequent to termination of the input signal;

said latching means being operable to terminate the activating signal to the switch means in response to a termination signal applied thereto;

delay means coupled to said latching means for preventing a termination signal from terminating the activating signal for a predetermined period;

wherein

said latching means has a first operating state during which an activating signal is not produced and a second operating state during which an activating signal is produced; said latching means being operable to be switched from the first operating state to the second operating state in response to an input signal at said input means, and being operable to be switched from the second operating state to the first operating state in response to a termination signal applied thereto;

and including

control means coupled to the delay means and to the latching means for inhibiting the latching means from being switched from the second operating state to the first operating state prior to termination of said predetermined period;

and wherein

said control means has a first operating state and has a second operating state during which a control signal is produced; said control means being caused to operate in the second operating state in response to an activating signal being produced by said latching means, and being operable to be switched from the second operating state to the first operating state in response to termination of said predetermined period; and

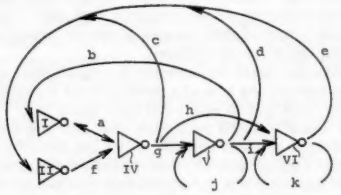
said latching means is inhibited from switching from said second operating state to said first operating state during the occurrence of said control signal.

4,259,595

CLOCKING SYSTEM FOR MOS TRANSISTOR LOGIC CIRCUIT

Ryozo Omori, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 780,706, Mar. 24, 1977, abandoned. This application Nov. 3, 1978, Ser. No. 957,434
Claims priority, application Japan, Mar. 24, 1976, 51-34048
Int. Cl.[3] H03K *19/096*
U.S. Cl. 307—452 **2 Claims**



1. A modular integrated circuit including a plurality of complementary MOS transistor switching circuits for performing a variety of logic functions comprising:

clock means for driving said switching circuits over a cycle including four consecutive time periods T_1 to T_4, said clock means including a first clock pulse train having a logic one in period T_1 and a logic zero in periods T_2, T_3, T_4, a second clock pulse train having a logic one in period T_3 and a logic zero in periods T_1, T_2, T_4 and a third clock pulse train having a logic one in periods T_3 and T_4 and a logic zero in periods T_1 and T_2, respectively, each of said clock pulse trains being periodic whereby each of said four consecutive time periods are successively reproduced in periodic form;

a type I circuit means responsive to said first clock pulse train, said type I circuit means including a complementary MOS inverter circuit coupled between the drain of a first N-channel MOS transistor and the drain of a first P-channel MOS transistor, the gate region of said first N-channel MOS transistor being responsive to said first clock pulse

train, said first P-channel MOS transistor being responsive to an inverted version of said first clock pulse train;

a type II circuit means responsive to said first and third clock pulse trains, respectively, said type II circuit means including a second N-channel MOS transistor, the output terminal of said type II circuit means being connected to the drain region of said second N-channel MOS transistor, the gate region of said second N-channel transistor being responsive to said first clock pulse train, a first logic function circuit means connected on one end to the source region of a second P-channel MOS transistor for performing a gating function, said first logic function circuit means connected at its other end to the drain region of a third P-channel MOS transistor, the drain region of said second P-channel MOS transistor connected to the output terminal of said type II circuit means, said second P-channel MOS transistor being responsive to said third clock pulse train, said third P-channel MOS transistor being responsive to said first clock pulse train;

a type III circuit means for performing a NAND logic function, said type III circuit means capable of performing an OR and a NOR logic function, said type III circuit means comprising a complementary MOS inverter circuit;

a type IV circuit means including a complementary MOS inverter coupled to the drain region of a third N-channel MOS transistor on one end and to the drain region of a fourth P-channel MOS transistor, said third N-channel MOS transistor being responsive to said second clock pulse train, said fourth P-channel MOS transistor being responsive to an inverted version of said second clock pulse train;

a type V circuit means including a fourth N-channel MOS transistor responsive to said second clock pulse train, the output terminal of said type V being connected to the drain region of said fourth N-channel MOS transistor, a second logic function circuit means, including a fifth P-channel MOS transistor for performing an AND logic function, said second logic function circuit means capable of performing an OR logic function and being connected to the output terminal of said type V circuit means on one end and to the drain region of a sixth P-channel MOS transistor on the other end, said sixth P-channel MOS transistor being responsive to said second clock pulse train;

a type VI circuit means including a fifth N-channel MOS transistor responsive to said second clock pulse train, the drain region of said fifth N-channel transistor connected to an output terminal of said type VI circuit means, a third logic function circuit means including a seventh P-channel MOS transistor for performing an AND logic function, said third logic function circuit means capable of performing on OR and an AND-OR logic function, and being connected to the output terminal of said type VI circuit means on one end and to the drain region of an eighth P-channel transistor being responsive to a said third clock pulse train;

said type I circuit means connected to be driven by receipt of an output signal from said type IV circuit means and said type V circuit means;

said first logic function circuit means of said type II circuit means connected to be driven by receipt of an output signal from said type IV, said type V, and said type VI circuit means;

said type IV circuit means connected to be driven by receipt of an output signal from said type I and said type II circuit means;

said second logic function circuit means of said type V circuit means connected to be driven by receipt of an output from said type IV circuit means;

said third logic function circuit means of the type VI circuit means connected to be driven by receipt of an output signal from said type IV and said type V circuit means; and

first and second ones of said type III circuit means connected to be driven by an output signal from said type V circuit means and said type VI circuit means, respectively, said first type III circuit means generating a first output signal, said second type III circuit means generating a second output signal, said second logic function circuit means of said type V circuit means connected to be driven by said first output signal, said third logic function circuit means of said type VI circuit means connected to be driven by said second output signal;

said clock means driving said type I–VI circuit means.

4,259,596

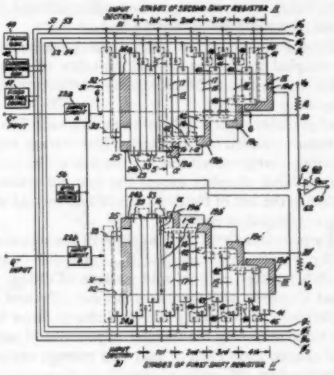
CHARGE TRANSFER SIGNAL PROCESSING APPARATUS FILTER

Jerome J. Tiemann, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 20, 1979, Ser. No. 105,757

Int. Cl.[3] **G11C** *19/28;* **H01L** *29/78;* **H03H** *15/02*

U.S. Cl. 307—221 D **4 Claims**



1. In combination,

a substrate of semiconductor material having a major surface,

a first plurality of first charge storage cells in said substrate adjacent said major surface arranged in a sequence, the width of each successive first charge storage cell being equal to or less than the width of a respective preceding first charge storage cell,

each of said first charge storage cells succeeding the first except the last which has a width greater than the width of a succeeding first cell including a first charge storage region and a second charge storage region,

the ratio of the width of the first storage region to the sum of the widths of the first and second storage regions of each of said first charge storage cells being set equal to a respective one of a first sequential series of predetermined values, the values assigned to a first cell except for the last not divided into a first and second region being zero,

said first plurality of first charge storage cells being serially coupled to form a first plurality of stages of a first charge transfer shift register, each stage including a respective first cell,

a first plurality of first collection means, each first collection means coupled to a respective first storage region for collecting charge stored therein, the first collection means of said first plurality except the first collection means coupled to the last of said first cells being connected in common,

means for providing a first sequence of packets of charge,

means for introducing serially to the initial first cell of said first shift register each of said first packets of charge and thereafter periodically and serially transferring each of

said packets of charge from first cell to first cell including the transfer of portions of said packets of charge from each of said first storage regions to a respective collection means,

a second plurality of first charge storage cells in said substrate adjacent said major surface arranged in a sequence, the width of each successive first charge storage cell being equal to or less than the width of a respective preceding first charge storage cell,

each of said first charge storage cells of said second plurality succeeding the first charge storage cell which has a width greater than the width of a succeeding first cell including a first charge storage region and a second charge storage region,

the ratio of the width of the first storage region to the sum of the widths of the first and second storage regions of each of said first charge storage cells of said second plurality being set equal to a respective one of a second sequential series of predetermined values, the values assigned to a cell except for the last not divided into a first and second region being zero, corresponding values of said first and second sequential series being equal,

said second plurality of first charge storage cells being serially coupled to form a second plurality of stages of a second charge transfer shift register, each stage including a respective first cell,

a second plurality of first collection means, each first collection means coupled to a respective first storage region for collecting charge stored therein, the first collection means of said second plurality except the first collection means coupled to the last of the first cells of said second plurality being connected in common,

means for providing a second sequence of packets of charge,

means for serially introducing to the initial cell of said second shift register each of said packets of charge of said second sequence and thereafter periodically and serially transferring each of said packets of charge from first cell to first cell including the transfer of portions of said packets of charge from each of said first storage regions to a respective first collection means,

means for transferring the charge collected by the first collection means coupled to the last of said first cells of said first plurality to the initial one of said first cells of said second plurality,

means for transferring the charge collected by the first collection means coupled to the last of said first cells of said second plurality to the initial one of said first cells of said first plurality,

means for deriving signal samples each of which represents the difference of the charge collected by said first collection means of said first plurality connected in common and collected by said first collection means of said second plurality connected in common.

4,259,597

CHARGE TRANSFER SIGNAL PROCESSING APPARATUS

Jerome J. Tiemann, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 20, 1979, Ser. No. 105,758

Int. Cl.[3] **G11C** *19/28;* **H01L** *29/78;* **H03H** *15/02*

U.S. Cl. 307—221 D **8 Claims**

1. In combination,

a substrate of semiconductor material having a major surface,

a circular shift register having N stages, each stage including a respective first charge storage cell adjacent said major surface,

first means for transferring packets of charge in each of the first charge storage cells of said circular shift register from one first charge storage cell to the respective next first charge storage cell in one direction and at one frequency,

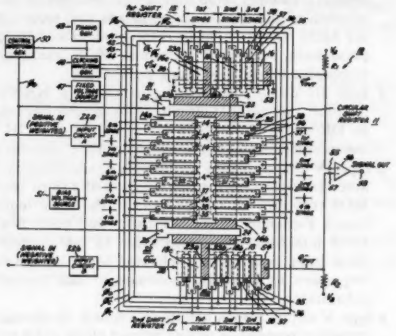
a first charge transfer and storage means including a first charge storage cell adjacent said major surface,

means for providing a first sequence of packets of charge,

second means for sequentially transferring at said one frequency each of said packets of charge of said first sequence of packets of charge to said first charge storage cell of said first charge transfer and storage means,

said first and second means being synchronized to provide storage of charge packets in the first charge storage cells of said first charge transfer and storage means and of said circular shift register over a common interval of time, recurrent at said one frequency,

first gating means for combining the charge packet in said



first charge storage cell of said first charge transfer and storage means with the charge packet in one of the first charge storage cells of said circular shift register during each of said common intervals of time and for dividing the combined packet of charge into two parts, a first part being stored in the first charge storage cell of said first charge transfer and storage means and a second part being stored in said one first charge storage cell of said circular shift register, said first part being a fixed fraction of the combined charge packet,

means for transferring each first part of a respective combined packet of charge out of said first charge storage cell of said first charge storage and transfer means at said one frequency.

4,259,598

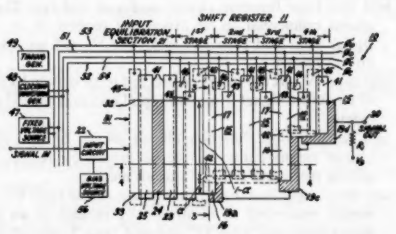
CHARGE TRANSFER SIGNAL PROCESSING APPARATUS TRANSVERSAL FILTER

Jerome J. Tiemann, Schenectady, and William E. Engeler, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 20, 1979, Ser. No. 105,756

Int. Cl.[3] **G11C** *19/28;* **H01L** *29/78;* **H03H** *15/02*

U.S. Cl. 307—221 D **10 Claims**



1. Charge transfer apparatus comprising

a plurality of first charge storage cells arranged in a sequence, each of said first charge storage cells divided into parts,

charge division means for dividing charge among said parts of said first charge storage cells,

the ratio of the charge contained within a first part of each of said first charge storage cells to the sum of the charges contained within all of the parts thereof being set equal to a respective one of a first sequential series of first predetermined values,

said first sequential series of first predetermined values being set to provide a series of weighting coefficients, each for a respective first charge storage cell,

said plurality of first charge storage cells being serially coupled to form a first plurality of stages of a charge transfer shift register, each stage including a respective first charge storage cell,

a plurality of collection means, each collection means coupled to a first part of a respective first charge storage cell for collecting charge stored therein, said plurality of collection means being connected in common,

means for providing a first input sequence of packets of charge, each packet representing a respective sample of a signal,

means for introducing sequentially into the initial cell of said shift register each of said first packets of charge and thereafter periodically and serially transferring and dividing each of said packets of charge from first charge storage cell to first charge storage cell including the transfer of portions of said packets of charge from each of said first parts to a respective collection means, the sequence of charges collected by said plurality of collection means connected in common providing an output sequence of packets,

said output sequence of packets representing the convolution of said first input sequence of packets with said series of weighting coefficients.

4,259,599

COMPLEMENTARY TRANSISTOR SWITCHING CIRCUIT

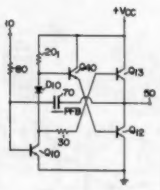
Shigeho Takada, Oita, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 6, 1979, Ser. No. 10,041

Claims priority, application Japan, Mar. 8, 1978, 53-26392

Int. Cl.³ H03K *17/60, 3/01*

U.S. Cl. 307—255 **6 Claims**



1. A switching circuit comprising:

a first transistor the base of which is supplied with an input signal from an input terminal of said switching circuit and the emitter of which is connected to a first power source;

a second transistor the emitter of which is connected to the first power source and the conductivity type of which is the same as that of the first transistor;

a third transistor the emitter and collector of which are connected respectively to a second power source and the collector of the second transistor and the conductivity type of which is opposite to that of the second transistor, the commonly connected collectors of said second and third transistors constituting an output terminal of said switching circuit;

current control means connected between the collector of the first transistor and the base of the third transistor for controlling a first base current of the third transistor;

current supply means for supplying a second base current to the second transistor, said current supply means being connected at a first end to the second power source and at a second end to the base of the second transistor;

current backflow-preventing means connected between the collector of the first transistor and said other end of the current supply means for preventing the first base current from flowing while said first transistor remains off; and

positive feedback means connected between said input and output terminals for elevating a switching speed of the switching circuit.

4,259,600

INTEGRATED INSULATED-GATE FIELD-EFFECT TRANSISTOR CONTROL DEVICE

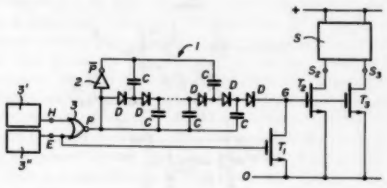
Jean Fellrath, Neuchatel, and Eric Vittoz, Cernier, both of Switzerland, assignors to Centre Electronique Horloger S.A., Neuchatel, Switzerland

Filed Jun. 26, 1978, Ser. No. 919,320

Claims priority, application Switzerland, Jun. 27, 1977, 7846/77

Int. Cl.³ H02M *1/08, 7/10;* **H03K** *5/02;* **G04C** *13/00*

U.S. Cl. 307—270 **4 Claims**



1. An integrated insulated-gate field-effect transistor control device comprising output terminals, at least one power transistor having a conduction path and a control electrode, terminals for connection to a power supply, a source of input control signals, and a control circuit having at least one input and an output and comprising: at least one voltage multiplier having first and second input connections and an output connection and formed by a chain of rectifier elements having conduction paths and connection points therebetween and a plurality of storage capacitors arranged in first and second sets and each having first and second terminals; means for providing signals in phase opposition; a generator for generating high frequency voltage pulses and having an output; and circuit means including a coincidence circuit having first and second inputs and an output, wherein said conduction path of said at least one power transistor is connected in series with said output terminals between said terminals of said power supply, said input of said control circuit is connected to said source of input control signals and said output of said control circuit is connected to said control electrode of said power transistor to apply thereto control signals at a higher voltage than that of said input control signals and than that of the power supply, said conduction paths of said rectifier elements of said chain of said at least one voltage multiplier being connected in series in the same direction between said first input connection and said output connection of said voltage multiplier, said first terminals of said storage capacitors being connected to respective ones of said connection points between said rectifier elements, said first set of said storage capacitors comprising alternate storage capacitors whose second terminals are connected to said first input connection of said voltage multiplier and said second set of capacitors having their second terminals connected to said second input connection thereof, said first and second input connections of said voltage multiplier being connected to said

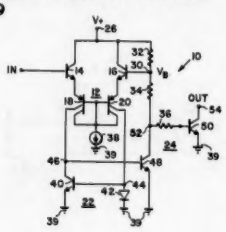
means for providing signals in phase opposition, said generator being arranged to generate said high frequency voltage pulses having a period at least several times shorter than the duration of an input control signal, said first input of said coincidence circuit being connected to said source of input control signals, said second input of said coincidence circuit being connected to the output of said generator and said first input connection of said voltage multiplier, said output of said voltage multiplier being connected to said control electrode of said power transistor, and said circuit means further comprise a discharge transistor having a conduction path and a control electrode, said conduction path of said discharge transistor being coupled to the control electrode of said power transistor, said control electrode of said discharge transistor being connected to said source of input control signals, whereby the capacitance of the control electrode of said power transistor is discharged at the end of the duration of each input control signal.

4,259,601

COMPARISON CIRCUIT HAVING BIDIRECTIONAL HYSTERESIS

Marc T. Stein, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 8, 1978, Ser. No. 967,826
Int. Cl.³ H03K *5/153, 3/295*
U.S. Cl. 307—359 **13 Claims**



1. Comparison circuit having bidirectional hysteresis, comprising in combination:

a differential amplifier stage having first and second inputs and outputs respectively, said first input being coupled to an input of the comparison circuit for receiving an input signal applied thereto, said second input receiving a controllable bias potential thereat;

differential-to-single ended circuit means coupled to said first and second outputs of said differential amplifier stage for producing a drive signal at an output thereof whenever the magnitude of said input signal is greater than the magnitude of said controllable bias potential; and

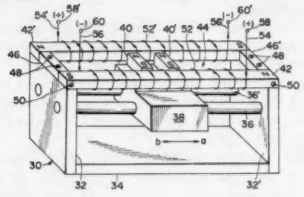
bias and output circuit means for varying the magnitude of said controllable bias potential from a first level to a second level in response to said input signal becoming greater than said first level, said bias and output circuit including first impedance means coupled between a first node at which is supplied a source potential and a second node and having an output connected to said second input of said differential amplifier stage; circuit means including first electron control means which is normally in a conducting state for supplying a first bias potential at said second node, said circuit means having an output coupled to the output of the comparison circuit; switching circuit means coupled between said output of said differential-to-single ended circuit means and said second node which is responsive to said drive signal for inhibiting said first electron control means of said circuit means and for supplying a second bias potential of different magnitude than said first bias potential at said second node whereby said controllable bias potential is caused to change to said second level value.

4,259,602

ELECTROMAGNETIC LINEAR-MOTION DEVICE

Hiroshi Kuribayashi, and Atsuo Ikeda, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 16, 1979, Ser. No. 30,138
Claims priority, application Japan, Apr. 20, 1978, 53/46799
Int. Cl.³ H02K *33/00*
U.S. Cl. 310—12 **4 Claims**



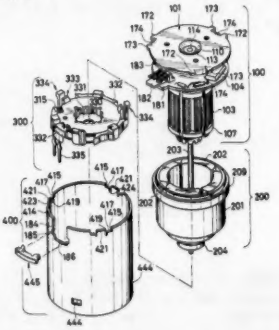
1. An electromagnetic linear-motion device, comprising at least one longitudinally elongated guide member; a movable unit mounted on the guide member and movable longitudinally of the guide member; a field magnet unit securely mounted on the movable unit; a pair of magnetic core members longitudinally elongated substantially in parallel with said guide member and spaced apart from each other to form an air gap between the field magnet unit and each of the core members; and coils helically wound in opposite directions to each other on said magnetic core members, respectively.

4,259,603

ELECTRIC MOTOR

Masami Uchiyama, Inagi; Toru Fuzimori, Tokyo, and Toshio Mori, Kashiwa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 13, 1978, Ser. No. 877,286
Claims priority, application Japan, Feb. 25, 1977, 52-21447[U]; Feb. 25, 1977, 52-21448[U]; Feb. 28, 1977, 52-23789[U]; Feb. 28, 1977, 52-23794[U]; Feb. 28, 1977, 52-23795[U]; Mar. 11, 1977, 52-25922
Int. Cl.³ H02K *11/00*
U.S. Cl. 310—68 B **17 Claims**



1. An electric motor comprising a stator assembly, a rotor assembly including a plurality of rotor magnets, a detecting winding assembly and motor housing means containing and relatively positioning said stator assembly, rotor assembly and detecting winding assembly; said stator assembly including stator windings, a control circuit substrate fixed relative to said stator windings so as to be positioned within the field of said rotor magnets, circuitry on said control circuit substrate for controlling a driving current supplied to said stator windings, and means mounted on said control circuit substrate for detect-

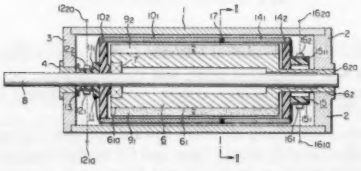
ing the rotational position of said rotor magnets; said rotor assembly including a shaft rotatably journalled in said stator assembly, a magnet casing secured to said shaft and within which said plurality of rotor magnets are fixed, and a detector magnet secured to said shaft; and said detecting winding assembly being arranged in face-to-face relationship with said detector magnet for generating detecting signals in response to the rotation of said detector magnet with said shaft.

4,259,604

DC ROTARY MACHINE

Kanemasa Aoki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1978, Ser. No. 942,884
Claims priority, application Japan, Sep. 17, 1977, 52-111871
Int. Cl.³ H02K *47/04*
U.S. Cl. 310—113 **10 Claims**



1. A DC rotary machine comprising:

(a) a stationary outer field yoke made of soft magnetic material in a form of cylinder;

(b) a stationary inner field yoke made of an oil-containing sintered alloy of iron system in the form of a cylinder disposed within said outer yoke concentrically with the latter, said inner field yoke having a field member and a bearing member of a reduced outer diameter as compared with the outer diameter of said field member, and a part of outer circumference of said bearing member being fixed on a part of said stationary outer field yoke;

(c) a rotary shaft rotatably supported by the inner wall surface of said inner yoke;

(d) a rotary coreless coil unit disposed within a spaced defined by the inner cylindrical surface of said outer yoke and the outer cylindrical surface of said inner yoke, said rotary coreless coil unit comprising a coil for a motor and a coil for a generator which are approximately equal in diameter and connected with each other in end-to-end fashion with the interposition of an insulating member between the two ends so as to form said single coil unit;

(e) a first coil supporting member in the shape of a disk secured on said rotary shaft for fixedly supporting another end of said coil for the motor;

(f) a second coil supporting member in the shape of a ring plate rotatably supported on the bearing member of said inner yoke for fixedly supporting another end of said coil for the generator;

(g) a first commutator electrically connected with said coil for the motor;

(h) a second commutator electrically connected with said coil for the generator;

(i) brush means for supplying electric current to said first commutator;

(j) brush means for taking up the induced voltage from said coil for the generator through said second commutator; and

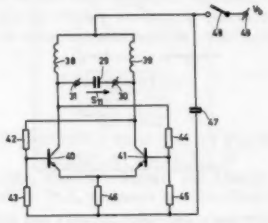
(k) stationary field permanent magnet means secured on said wall surface of one of said yokes.

4,259,605

CIRCUIT FOR CONTROLLING A PIEZO-ELECTRIC POSITIONING ELEMENT

Albert M. A. Rijckaert, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 21, 1979, Ser. No. 41,021
Claims priority, application Netherlands, May 29, 1978, 7805802
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—317 **10 Claims**



1. A device for controlling a piezo-electric positioning element, in particular for positioning a recording and/or reproducing element relative to an information track, said device comprising means for generating an oscillating electrical signal having an amplitude which varies symmetrically about a reference value and decreases to said reference value as a function of time and means for applying said oscillating signal to the piezo-electric element to cause said element to vibrate with a decreasing amplitude and assume a well defined reference configuration upon decrease of said amplitude of said oscillating signal to said reference value, said generating means comprising a resonant circuit including the piezo-electric element which acts as a capacitance in said resonance circuit, a transformer having a primary winding with a center tap and a secondary winding, first switching means for connecting the piezo-electric element in parallel with said secondary winding, first means for closing said first switching means prior to the beginning of said oscillating signal, first coupling means for connecting said tap to one terminal of a power supply, a first transistor having a collector connected to one end of said primary winding, a second transistor having a collector connected to the other end of said primary winding, second coupling means for connecting the emitters of said first and second transistors to a second terminal of the power supply, the base electrode of said first transistor being connected to the collector of said second transistor in a degenerative sense and the base electrode of said second transistor being connected to the collector of said first transistor in a degenerative sense, and second means for starting electrical oscillations in said resonant circuit to produce said oscillating signal.

4,259,606

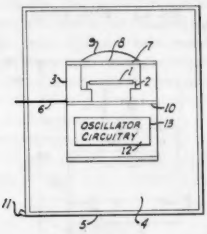
FAST WARM-UP OVEN CONTROLLED PIEZOELECTRIC OSCILLATOR

John R. Vig, Colts Neck, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 25, 1979, Ser. No. 42,654
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—343 **13 Claims**

1. An oven controlled oscillator assembly comprising an evacuated ceramic flatpack crystal enclosure, a piezoelectric crystal plate within said crystal enclosure, a piezoelectric crystal plate within said crystal enclosure, thermally insulating means mounting said crystal plate in said crystal enclosure, said crystal enclosure having at least one lid which includes an infrared transmitting window, an infrared source in close proximity to said window outside of said crystal enclosure to emit radiation through the window to said crystal plate, a reflector

mounted as a dome over said window with said infrared source between the window and the reflector, said radiation being of wavelengths absorable by said crystal plate, means including temperature sensing means on said crystal plate and temperature control circuitry for controlling the emission from the infrared source so as to maintain said crystal plate at a predetermined temperature, oscillator circuitry and means for thermally insulating said crystal plate and oscillator circuitry from the environment outside said assembly, whereby the assembly has a very small thermal time constant for fast warmup of the crystal plate, and a very large thermal time constant to give insensitivity to outside environmental changes.

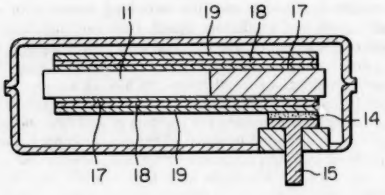


4,259,607

QUARTZ CRYSTAL VIBRATOR USING NI-AG OR CR-NI-AG ELECTRODE LAYERS

Kazuo Noguchi, Tokyo; Makoto Wakasugi, and Fumio Kohyama, both of Tokorozawa, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jun. 19, 1978, Ser. No. 916,619
Claims priority, application Japan, Jun. 24, 1977, 52-82453[U]
Int. Cl.[2] H01L *41/10*
U.S. Cl. 310—364 **4 Claims**



1. A tuning fork-type quartz crystal vibrator comprising:

a tuning fork-shaped quartz crystal; and

an electrode formed on a surface of said quartz crystal and including a thin nickel film deposited directly on upper and lower surfaces of said quartz crystal, and a silver film deposited on said nickel film, wherein said thin nickel film has a thickness of less than 500 A and said silver film has a thickness less than 2000 A.

4,259,608

DIRECT VIEWING STORAGE TARGET HAVING AN ARRAY OF FLUORESCENT DOTS FOR A CATHODE RAY TUBE

Gerald E. McTeague, 3750 NW. Olympic Dr., Portland, Oreg. 97229

Filed Apr. 27, 1977, Ser. No. 791,269
Int. Cl.[3] H01J *29/18, 29/30, 31/20*
U.S. Cl. 313—398 **17 Claims**

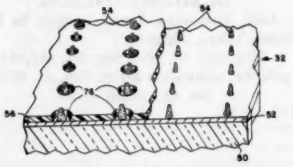
1. A cathode ray storage tube comprising:

an insulative transparent support member having a transparent conductive layer on an inside surface of said support member, said inside surface being smooth and nonanomalous;

connection means for providing said conductive layer with a predetermined voltage level;

a continuous dielectric layer of fluorescent material for storing a viewable charge pattern thereon, said layer being located on one side of said conductive layer;

a multiplicity of spaced conductive collector electrodes in the form of particulate fluorescent material having inner ends connected to said conductive layer, said collector electrodes extending from said conductive layer through said dielectric layer at least to an opposite side thereof to provide an equipotential surface on said opposite side of said dielectric layer at substantially the same voltage level as said conductive layer, said dielectric layer being substantially continuous except where interrupted by said collector electrodes; and



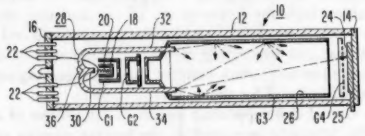
means for emitting electrons toward and onto the opposite side of said dielectric layer and for establishing an illuminated electron image on said fluorescent collector electrodes onto which said viewable charge pattern is established and for directing low velocity electrons at said opposite side for driving selected areas of said dielectric layer toward one of two stable potentials whereby secondary electrons are emitted from said viewable charge pattern and collected by said collector electrodes to retain said charge pattern thereon.

4,259,609

PICK-UP TUBE HAVING LIGHT CONTROLLABLE FURCATED LIGHT PIPES

Alfred Month, Lancaster, and Timothy E. Benner, Rohrerstown, both of Pa., assignors to RCA Corp., New York, N.Y.

Filed Oct. 20, 1978, Ser. No. 952,999
Int. Cl.[3] H01J *31/38;* G02B *5/14*
U.S. Cl. 313—372 **6 Claims**



1. In a pick-up tube having a photoconductive target electrode, a light source for illuminating said target electrode for biasing the dark current of said target electrode, and a light conductor for directing light from said light source through said conductor to said target electrode, said light conductor having a stem section and at least two branches defining a crotch region between two of said branches, the improvement wherein:

said light conductor includes means to eliminate the apex of the crotch angle by redistributing the glass mass at said apex to selectively attenuate the light transmitted through said conductor.

4,259,610

ELECTRON GUN ASSEMBLY FOR CATHODE RAY TUBES AND METHOD OF ASSEMBLING THE SAME

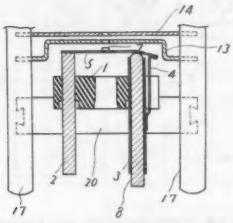
Yukio Takanashi, Hiratsuka, and Sadao Matsumoto, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 31, 1978, Ser. No. 938,978

Claims priority, application Japan, Sep. 12, 1977, 52-108945; Dec. 27, 1977, 52-156502

Int. Cl.³ H01J 9/18, 29/04, 29/50

U.S. Cl. 313—417 8 Claims



1. An electron gun assembly for cathode ray tubes comprising:

a plurality of glass rods;

a plurality of apertured grid electrodes, including a first grid electrode having an aperture therethrough;

a cathode substrate;

a plurality of direct-heated cathodes mounted on said substrate, said substrate and said grid electrodes supported and separated from each other by the glass rods, each of the cathodes including a pair of spaced apart support members, a filament connected at its opposite ends to the support members and stretched between said support members and an electron emitting member disposed on the filament between the ends thereof in a position aligned with the aperture in the first grid electrode and spaced a predetermined distance therefrom;

wherein one of each of the paired support members comprises movable adjusting means contacting a respective filament for adjusting the spacing of the filament and the electron emitting member relative to the first grid electrode, thereby precisely establishing the spacing between each electron emitting member and the first grid electrode.

4,259,611

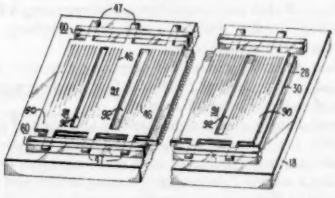
SEGMENTED SHADOW MASK

John A. van Raalte, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 27, 1979, Ser. No. 33,965

Int. Cl.³ H01J 29/07, 31/20

U.S. Cl. 33—422 5 Claims



1. In a display device having an evacuated envelope, a plurality of support walls within said envelope partitioning said envelope into a plurality of parallel channels, an electron beam guide in each of said channels, electron generating means disposed at one end of each of said beam guides, a mosaic phosphor screen on an inner surface of said envelope, and a multiapertured shadow mask mounted in spaced relation to said screen, the improvement comprising:

said shadow mask being segmented so that a plurality of discrete segments are required to cover the entire screen, each of said mask segments extending along substantially the full length of said channels and spaced apart from at least one other of said mask segments so that one of said support walls can pass between adjacent mask segments free from contact with said mask segments, each of said mask segments further comprising means at each end thereof for mounting said mask segment relative to said screen.

4,259,612

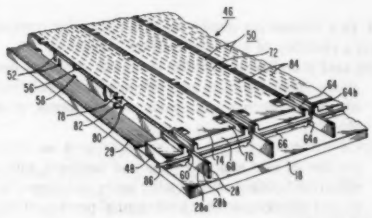
FACEPLATE ASSEMBLY FOR A FLAT PANEL COLOR DISPLAY DEVICE

Victor Christiano, Hamilton Square, and Charles B. Carroll, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 30, 1979, Ser. No. 71,389

Int. Cl.³ H01J 29/00, 29/07, 31/20

U.S. Cl. 313—422 25 Claims



1. In a display device, having an evacuated envelope including a back wall, a plurality of mutually parallel internal support walls, each of said support walls comprising separable first and second wall members, each of said first wall members having a proximal end in contact with said back wall and a distal end in contact with a second wall member, said support walls being substantially perpendicular to said back wall so that said support walls partition the device into a plurality of channels, the improvement comprising:

a faceplate assembly integral with one surface of said envelope comprising in combination;

a viewing faceplate having reference means therein;

at least two registration blocks disposed in mutually parallel rows on the inner surface of said faceplate, each of said registration blocks being aligned parallel to the direction of high frequency scan, each of said blocks having block registration means therein;

a mosaic phosphor screen on said inner surface of said faceplate between said parallel rows of registration blocks;

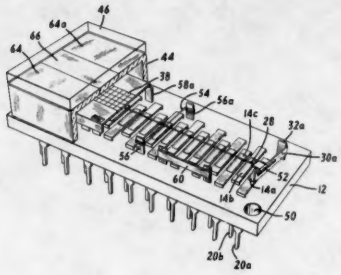
means for detachably attaching said plurality of second wall members to said registration blocks so that a proximal end of each of said second wall members contacts said phosphor screen, each of said second wall members having a distal end in contact with the distal end of a different one of said first wall members; and

a plurality of discrete shadow masks in spaced relation to said phosphor screen, each of said shadow masks being slidably attached to and extending between adjacent ones of said second wall members, each of said shadow masks having mask registration means connected to said block registration means, each of said shadow masks extending along substantially the entire length of a different one of said channels.

4,259,613
FLUORESCENT INDICATOR AND METHOD OF MAKING SAME

Richard DuBois, North Caldwell, N.J., assignor to Wagner Electric Corporation, Parsippany, N.J.

Continuation-in-part of Ser. No. 868,678, Jan. 11, 1978, Pat. No. 4,206,404, which is a division of Ser. No. 732,330, Oct. 14, 1976, Pat. No. 4,100,455. This application Jan. 5, 1979, Ser. No. 1,302
Int. Cl.³ H01J *63/02, 63/06, 9/32*
U.S. Cl. 313—497 **23 Claims**



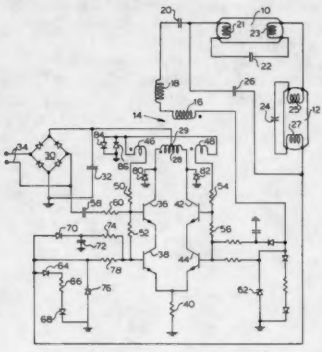
1. In a fluorescent display device, apparatus comprising:
(a) a plurality of metallic leads and supports;
(b) said plurality of metallic leads and supports being integrally formed with at least one header bar relatively holding and securing said leads and supports at one end thereof;
(c) a vitreous substrate cast about at least an intermediate portion of said metallic leads and supports, said vitreous substrate holding said metallic leads and supports relative to said substrate so that a substantial portion of said metallic leads and supports remains uncovered between said at least one header bar and one side of said vitreous substrate;
(d) at least some of said metallic leads and supports extending completely through said vitreous substrate to protrude beyond a second side of said substrate; and
(e) said at least one header bar being removeable after casting said vitreous substrate whereby relatively positioned plug-in leads are formed.

4,259,614
ELECTRONIC BALLAST-INVERTER FOR MULTIPLE FLUORESCENT LAMPS

Thomas P. Kohler, 69 Oswego St., Baldwinsville, N.Y. 13207

Filed Jul. 20, 1979, Ser. No. 59,218
Int. Cl.³ H05B *41/29*
U.S. Cl. 315—219 **10 Claims**

1. An electronic ballast-inverter circuit for fluorescent lamps comprising:
a transformer having primary and secondary windings, said secondary winding adapted to be connected in series with a fluorescent lamp,
a capacitor, an inductor and a resistor connected in series with said secondary winding,
a source of DC connected to a center tap of said primary winding,
a transistor connected to one end of said primary winding for selectively drawing current through one-half of said primary winding,

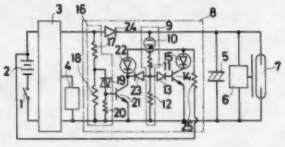


and a feed-back circuit including said resistor for biasing said transistor in response to current flowing through said secondary winding.

4,259,615
PHOTOGRAPHIC FLASH DEVICE

Toshitsugu Kashihara, Nara, and Kazuo Tanaka, Neyagawa, both of Japan, assignors to West Electric Company, Ltd., Osaka, Japan

Filed Mar. 12, 1979, Ser. No. 19,403
Claims priority, application Japan, Mar. 20, 1978, 53-31853
Int. Cl.³ H05B *41/32*
U.S. Cl. 315—241 P **20 Claims**



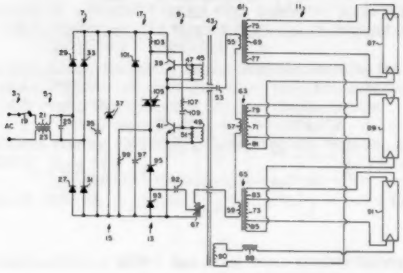
1. A photographic flash device comprising:
a main capacitor to be charged by a DC-DC converter for giving a flashing energy to a flash discharge tube,
a constant-voltage circuit for controlling an oscillation function of said DC-DC converter,
a first detection circuit for detecting a first predetermined voltage of said main capacitor,
a first display means connected to said first detection circuit, for indication of a first state for said first predetermined voltage of said main capacitor and comprising a first light emitting display device and a first switching element connected in series therein,
a second detection circuit for detecting a second predetermined voltage higher than said first predetermined voltage of said main capacitor, and
a second display means connected to said second detection circuit, for indication of a second state for said second predetermined voltage of said main capacitor and comprising a second light emitting display device and a second switching element connected in series therein, a backward current preventing means being connected between said first detection circuit and the common connecting point of said second light emitting display device and said second switching element for turning said first switching element off during said second switching element being turned on.

4,259,616

MULTIPLE GASEOUS LAMP ELECTRONIC BALLAST CIRCUIT

Gerald T. Smith, Muncy, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jul. 9, 1979, Ser. No. 55,676
Int. Cl.³ H05B *41/16, 41/24*
U.S. Cl. 315—256 **6 Claims**



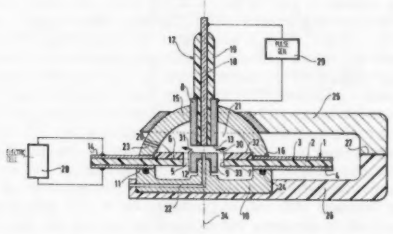
1. A multiple gaseous lamp electronic ballast circuit having a high frequency inverter circuit coupled to a potential source and a multiple gaseous lamp load circuit and characterized by a separate transformer having a primary, secondary and a pair of filament windings, said primary windings of all of said separate transformers series coupled to said high frequency inverter circuit, said secondary windings and said pair of filament windings of each transformer coupled to one of said gaseous lamps, and one of said pair of filament windings of each of said transformers series connected to said high frequency inverter circuit.

4,259,617

DEVICE FOR PRODUCING AN ELECTRIC DISCHARGE IN A FLAT-PLATE TRANSMISSION LINE

Bruno Godard, Gif-sur-Yvette, France, assignor to Societe Anonyme dite: Compagnie Generale d'Electricite, Paris, France

Filed Jun. 6, 1979, Ser. No. 46,129
Claims priority, application France, Jun. 9, 1978, 78 17270
Int. Cl.³ H01S *3/09*
U.S. Cl. 315—326 **13 Claims**



1. A device for setting up an electric discharge in a flat-plate transmission line, said flat-plate transmission line including an insulating plate, a transversal opening within said insulation plate, a first metal sheet pressed against a first surface of said plate and a second metal sheet pressed against a second surface of said plate, said device including:

at least one first electrode;

a second electrode opposite to said first electrode, said second electrode being disposed along an axis which passes through the opening perpendicularly to the plane of said plate;

a first metal part disposed on a first side of said transmission line, said first metal part being in contact with said first electrode and pressing on a first portion of said first metal sheet, said portion surrounding the opening;

a second metal part disposed on the second side of said transmission line, said second metal part being in contact with said second electrode and pressing on a second portion of said second metal sheet, said portion surrounding the opening, said first and second metal parts forming a portion of the walls of a chamber which immediately surrounds the opening and the space between said first and second electrodes;

a high-voltage electric cell whose terminals are connected respectively to said first metal sheet and to said second metal sheet so as to charge the electrodes; and

means for triggering an electric discharge between said first electrode and said second electrode;

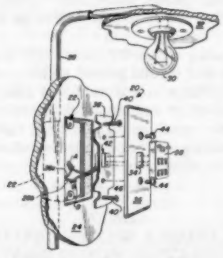
the improvement wherein said second electrode in contact with said second metal part passes through the opening from the second side towards the first side of the transmission line through the entire thickness thereof so that the end of said second electrode and the opposed end of said first electrode are situated in the chamber beyond the first metal sheet.

4,259,618

ELECTRONIC ASSEMBLY

Ole K. Nilssen, Caesar Dr., Rte. 4, Barrington, Ill. 60010

Filed Aug. 28, 1978, Ser. No. 937,452
Int. Cl.³ H05B *37/02, 39/04, 41/36*
U.S. Cl. 315—360 **11 Claims**



1. An electronic assembly operable to control the switching of a single leg of an electrical load circuit connected to a power source and adapted for mounting at a standard electrical wall-switch box having a face plate with a single central aperture therein, said assembly comprising:

electrically actuatable load circuit switching means disposed within the wall-switch box,

a multiple-conductor receptacle being connected to the load switching means and mounted in alignment with the aperture of the face plate and .

a plug-in programming means adapted for placement exteriorly of the face plate and having a multiple-conductor plug insertable through the aperture to engage the receptacle;

whereby said programming means operates said circuit switching means for controlled energization of the electrical load.

4,259,619

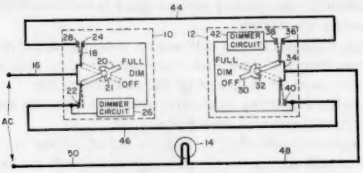
THREE-WAY LIGHT DIMMER SWITCH

Bill R. Wall, Bulverde, Tex., assignor to Power Controls Corporation, San Antonio, Tex.

Continuation-in-part of Ser. No. 647,640, Jan. 8, 1976, which is a continuation-in-part of Ser. No. 579,255, May 20, 1975, Pat. No. 3,990,033. This application May 16, 1977, Ser. No. 797,528

Int. Cl.³ H05B *37/02, 39/06*

U.S. Cl. 315—361 **4 Claims**



1. A three-way switching circuit for varying power received by a load comprising:

first switching means having a first power limiting circuit therein, said first switching means including a first contactor arm mounted therein actuated at first and second limit positions of a first arcuately moveable control, said actuation of said first contactor arm by said first arcuately moveable control changing electrical connections between said first contactor arm and said first power limiting circuit, said first contactor arm being connected to a first side of a voltage source;

second switching means having a second power limiting circuit therein, said second switching means including a second contactor arm mounted therein actuated at third and fourth limit positions of a second arcuately moveable control, said actuation of said second contactor arm by said second arcuately moveable control changing electrical connections between said second contactor arm and said second power limiting circuit, said load being connected in series with a second side of said voltage source and said second contactor arm;

first connecting means electrically connecting said first power limiting circuit to said second power limiting circuit;

second connecting means for electrically connecting either of said first and second power limiting circuits through said first contactor arm to said first side of said voltage source and through said second contactor arm to said load to vary power received by said load, both said first and second switching means being independently operable to cause said variation of power.

4,259,620

LOW COST, VARIABLE SPEED, CONSTANT TORQUE INDUCTION MOTOR DRIVE

Robert M. Oates, and Theodore M. Heinrich, both of Murrysville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 18, 1978, Ser. No. 952,428

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—802 **3 Claims**

1. In an AC motor drive having an induction motor supplied with AC current from a DC power source through an inverter, including:

a first set of three transistors associated with a positive pole of said source;

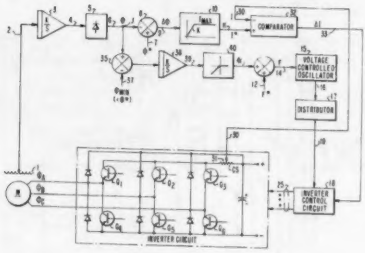
a second set of three transistors associated with a negative pole of said source;

means for gating said transistors by pairs selected from the respective said sets each during 120° time intervals of conduction, said pairs being in relation to respective phases of said motor, and for distributing said time intervals between the respective pairs in succession through the respective motor phases; the combination of: means for sensing the current fed by said source into one of said sets;

bang-bang feedback control loop means responsive to the difference between a representative signal derived from said sensing means and a current reference signal operative on said other set for alternately increasing and decreasing said difference in opposite directions about a predetermined mean level and within a predetermined deadband of control; and

a coil associated with said motor for deriving a signal representative of the flux therein;

said current reference signal being derived in relation to the difference between said flux representative signal and a flux reference signal.



4,259,621

ARRANGEMENT FOR GUIDING THE ROTARY SPEED OF ONE OR MORE FOLLOWER MOTORS IN RESPONSE TO THE PULSE FREQUENCY OF A GUIDE PULSE FREQUENCY GENERATOR

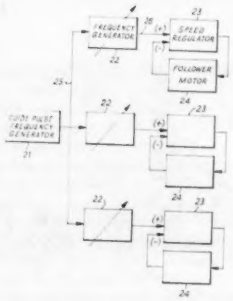
Jakob S. Jakobsen, Sonderborg, and Robert M. McCulloch, Broager, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Aug. 31, 1978, Ser. No. 938,698

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1977, 2739846

Int. Cl.³ H02P *5/46*

U.S. Cl. 318—85 **5 Claims**



1. A speed regulator for a guide and follower motor assembly, comprising, a guide pulse frequency generator driveable by a guide motor, frequency converter means responsive to said generator for driving a follower motor, said converter means including a frequency regular with negative feed back means which include a frequency divider, adjusting means for said divider and setting means for said adjusting means, said adjusting means including an up/down counter for operating said frequency divider, resetting means for said counter to provide a frequency indicating value for the output of said

counter, an adjustable pulse generator for driving said counter, said setting means including add/subtract means, a comparator for comparing the outputs of said add/subtract means and said counter to control said pulse generator, said comparator having parity output means for controlling on/off operation of said pulse generator and up/down output means for controlling the up/down operation of said counter.

4,259,622

CIRCUIT ARRANGEMENT FOR DRIVING AND FOR INDEPENDENT RECUPERATION BRAKING OF A VEHICLE

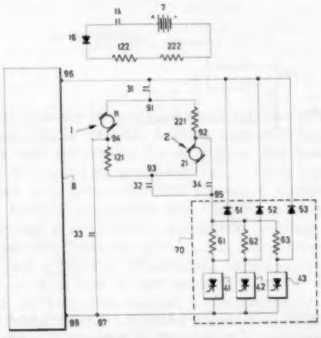
Jan Kamenicky; Jan Michl; Zdenek Sindelar; Stanislav Ibl, and Jaroslav Salivar, all of Prague, Czechoslovakia, assignors to CKD Praha, oborovy podnik, Prague, Czechoslovakia

Filed Nov. 25, 1977, Ser. No. 854,622

Claims priority, application Czechoslovakia, Nov. 25, 1976, 7625-76

Int. Cl.[3] **H02P** *3/00, 3/14, 7/68*

U.S. Cl. 318—86 **1 Claim**



1. Circuit arrangement for the driving and independent braking of a vehicle, comprising two series connected DC compound traction motors, said traction motors each having an armature and a series winding and a separate excitation winding, a DC feeding source with a first and second feeding terminal, the nominal voltage of the DC feeding source being higher than the nominal voltage of the armatures of the traction motors, a pulse converter with an input terminal and an output terminal, a first and a second driving contactor, a first and a second brake contactor, four terminals interconnecting the armatures and series windings of both DC traction motors, circuit means connecting the first terminal of the DC traction motors through the first driving contactor to the first feeding terminal of the DC feeding source, circuit means connecting the armature of the first traction motor through said first terminal of DC traction motors to the series winding of the second traction motor, circuit means connecting the second terminal of the DC traction motors through the second driving contactor to the input terminal of the pulse converter, circuit means connecting the series winding of the first traction motor through the second terminal to the armature of the second traction motor, circuit means connecting the output terminal of the pulse converter through the first brake contactor to the third terminal of the DC traction motors, circuit means connecting the armature of the first traction motor through the third terminal to its series winding, circuit means connecting the input terminal of the pulse converter through the second brake contactor to the fourth terminal of DC traction motors, circuit means connecting the armature of the second traction motor through the fourth terminal to its series winding, circuit means connecting the output terminal of the pulse converter to the second feeding terminal of the DC feeding source, an auxiliary DC source including a further contactor for increased excitation and a diode connected in series, and circuit means connecting the separate excitation windings of the DC traction motors through the further contactor and the diode to the auxiliary DC source.

4,259,623

SERIES-WOUND ELECTRIC MOTOR AND CONTROL SYSTEM FOR GOVERNING THE SPEED THEREOF

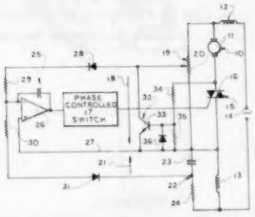
Helmut Moeder, Stuttgart, and Guenter Schirmer, Ingersheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 19, 1980, Ser. No. 122,687

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1979, 2906388

Int. Cl.[3] **H02K** *23/08*

U.S. Cl. 318—249 **8 Claims**



1. An electronic control system for use with a series-wound electric motor having a first field coil, a second field coil and an armature winding, in which motor the first field coil is connected to a first side of the armature winding a first side of a thyristor is connected to the armature winding and the second field coil is connected to the second side of the thyristor which system is designed to allow motor speed regulation by appropriately firing the thyristor in accordance with a first control voltage, a second control voltage, and a reference voltage, when the first control voltage is derived from the first side of the armature winding, the second control voltage approximates a voltage across the second field coil and the reference voltage is a voltage at a point intermediate the thyristor and the second field coil, comprising:

a differential amplifier having an inverting input, a non-inverting input, and an output, the differential amplifier being so connected that a voltage at the output is equal to a time average of a difference between voltages appearing at its inputs and a sum of positive cycles of one of the control voltages and negative cycles of another of the control voltages appears at one of the inputs and the reference voltage appears at another of the inputs;

a trigger circuit connected between the output of the differential amplifier and the thyristor and operating in a manner as to fire and cut off the thyristor in accordance with voltages appearing at the output of the differential amplifier; and

a holding circuit operating in a manner that the reference voltage is maintained while the thyristor is cut off.

4,259,624

ARRANGEMENT FOR WIPING A VEHICLE WINDOW

Horst Seibicke, Bühl-Altschweier, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,433

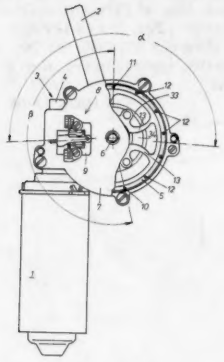
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1978, 2803264

Int. Cl.[3] **H02P** *1/02*

U.S. Cl. 318—282 **10 Claims**

1. An arrangement for wiping a vehicle window, comprising a wiping element adapted to pivot through a predetermined wiping angle; an electric motor having a circuit and a rotatable

motor shaft; a transmission driven by said motor shaft and having an output shaft on which said wiping element is mounted; an output gear also mounted on said output shaft of said transmission for joint movement therewith, said output gear having a plurality of holes which are spaced from one another in circumferential direction of the gear; and a switching device operative for reversing the direction of rotation of said electric motor when said wiping element reaches the



respective limits of said wiping angle, including a direction-reversing switch having contact elements interposed in said electric circuit, and two switch-actuating pins spaced from one another by an angle corresponding to said wiping angle and operative for actuating said switch, said pins being mounted on said output gear for joint rotation therewith and at least one of said pins being insertable into any one of said holes to permit adjustment of the circumferential distance between said pins and thereby of said wiping angle.

4,259,625

ROTATIONAL DIRECTION INDICATING APPARATUS

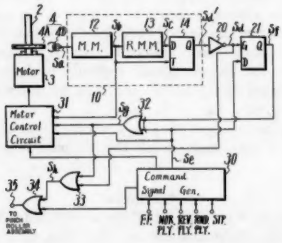
Akira Hatakeyama, Tokyo; Atsuo Matsuyama, Atsugi, and Yutaka Moritake, Yamato, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 884,962, Mar. 9, 1978, abandoned. This application May 22, 1978, Ser. No. 908,361

Claims priority, application Japan, Mar. 9, 1977, 52-25616

Int. Cl.³ G05B *23/02*

U.S. Cl. 318—328 **15 Claims**



1. In apparatus including a rotary member whose direction of rotation is determined by a command signal, indicating means comprising frequency generating means for sensing the actual speed of said rotary member to produce a speed representing signal whose frequency is representative of the actual speed of said rotary member; speed detecting means coupled to said frequency generating means for producing a pulse signal when the speed of said rotary member is less than a predetermined speed; and means responsive to said command signal and actuated by said pulse signal to provide an indicating signal corresponding to the direction of rotation determined by said command signal at the time that said pulse signal is produced.

4,259,626

SERVO CONTROL SYSTEM OPERABLE ON DIGITAL BASIS WITH LIMIT CYCLE SUPPRESSED

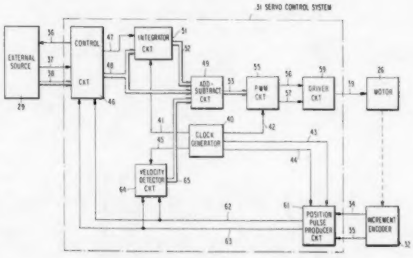
Tadashi Nomura, and Hiroshi Inada, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 7, 1979, Ser. No. 46,291

Claims priority, application Japan, Jun. 9, 1978, 53-70074; Nov. 8, 1978, 53-137495; Mar. 30, 1979, 54-39168; Apr. 20, 1979, 54-49336

Int. Cl.³ G05B *11/28*

U.S. Cl. 318—599 **7 Claims**



1. A digital servo control system responsive to a command signal indicative of a commanded position of a movable element and a pair of incremental position signals having polarities variable with a phase difference therebetween in response to a predetermined incremental angle of rotation of a motor rotatable with a variable angular velocity to vary a present position of said element, for producing a motor drive signal for controllably driving said motor to position said element at said commanded position, said angular velocity having either of two senses at a time, said phase difference being representative of the sense of said angular velocity, said system comprising position pulse producing means responsive to said incremental position signals for producing position pulses representative of a variation in said current position, wherein the improvement comprises:

control signal producing means responsive to said command signal and said position pulses for calculating a displacement from said present position to said commanded position and for producing a control signal digitally representative of a reference angular velocity selected for said motor in consideration of said displacement until an instant at which said displacement is reduced in absolute value to a predetermined value, a first positional error determined by said displacement during a prescribed interval of time following said instant, and a second positional error having a value increasing in absolute value with relation to said displacement when a predetermined interval of time lapses after said instant, said prescribed interval being not longer in duration than said predetermined interval, said movable element being positioned substantially at said commanded position within said predetermined interval; and

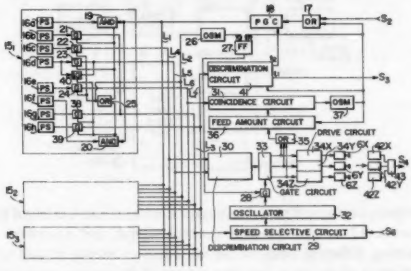
motor drive signal producing means responsive to said control signal and said position pulses for producing said motor drive signal.

4,259,627

NUMERICALLY CONTROLLED TRANSFER MACHINE

Takeshi Matsuno, and Takeshi Kobayashi, both of Narashino, Japan, assignors to Seiko Seiki Kabushiki Kaisha, Chiba, Japan

Filed Dec. 27, 1977, Ser. No. 864,272
Claims priority, application Japan, Jan. 7, 1977, 52/571
Int. Cl.[3] G05B 19/29
U.S. Cl. 318—600 5 Claims



1. In a numerically controlled transfer machine of the type having a plurality of movable working units each including a positioning feed mechanism for controlling the feeding and return movements of its corresponding working unit; and a rotary index table having mounted thereon a plurality of jig tables for holding workpieces and operable in response to rotary indexing movement to successively position said jig tables at working stations opposite respective ones of said working units: a plurality of detecting means each coacting with an associated one of said working units for detecting when said working unit reaches a predetermined position during its course of return movement and providing an origin reference signal in response to such detection and applying the origin reference signal to the corresponding positioning feed mechanism to effect return positioning of said working unit to a preselected origin return position in readiness for the next feeding movement, each said detecting means including means for enabling movement thereof relative to its associated working unit after detection of said predetermined position to thereby prevent damage to said detecting means in the event of continued return movement of said working unit past said preselected origin return position.

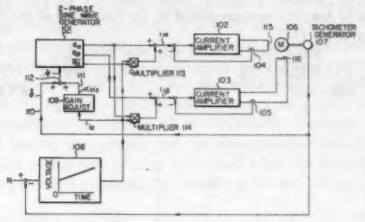
4,259,628

CONTROL DEVICE OF AC MOTOR

Takanobu Iwakane; Tohru Kai; Kenji Hirose, and Koichiro Nakagawa, all of Kitakyushu, Japan, assignors to Kabushiki Kaisha Yaskawa Denki Seisakusho, Fukuoka, Japan

Filed Aug. 15, 1978, Ser. No. 933,914
Claims priority, application Japan, Aug. 17, 1977, 52-98991; Aug. 17, 1977, 52-98992; Nov. 14, 1977, 52-153626; Nov. 17, 1977, 52-155998; Mar. 3, 1978, 53-24730
Int. Cl.[3] H02P 5/28, 7/36
U.S. Cl. 318—799 4 Claims

1. A control device of an induction motor, which comprises: a pulse generator (1802) coupled to said motor (1); a difference counter (1804) for counting the difference between an output (Nfb) of said pulse generator (1802) and a speed instruction value (Nref); a circuit (1805) for obtaining a slip frequency in accordance with contents of said difference counter (1804); a waveform generator (1806) for generating two-phase sine waves having a predetermined frequency from the output (Nfb) of said pulse generator (1802) and said slip frequency; and digital-to-analog converters (1807 and 1808) in which the contents of said difference counter (1804) are multiplied by outputs of said waveform generators (1806), so that the outputs of said waveform generator (1806) are employed as a stator exciting current component, while the outputs of said digital-to-analog converters (1807 and 1808) are employed as a torque



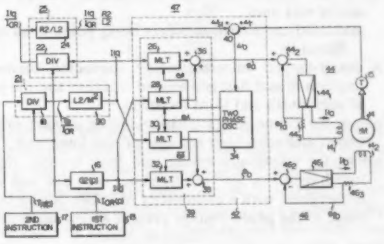
current component, and the phases of said motor (1) are energized on the basis of a synthetic value of said two components.

4,259,629

CONTROL DEVICES OF INDUCTION MOTORS

Ryoichi Kurosawa, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 29, 1978, Ser. No. 937,823
Claims priority, application Japan, Sep. 19, 1977, 52/112480
Int. Cl.[3] H02P 7/36
U.S. Cl. 318—807 6 Claims

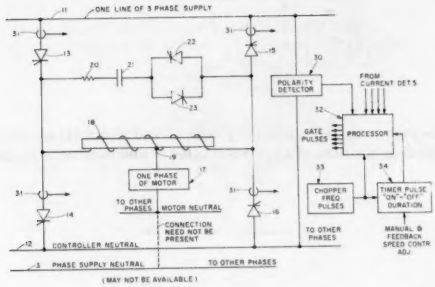


1. A control device of an induction motor comprising:
first instruction setting means for producing a first instruction signal which sets a first signal corresponding to a first current component, said first current component having the same phase as an exciting current of a primary current supplied to a primary winding of said induction motor;
second instruction setting means for producing a second instruction signal which sets a second signal corresponding to a second current component, said second current component having a phase difference of 90° with respect to said first current component;
arithmetical operating means for producing a drive signal which contain said first and second current components as an amplitude component and phase components;
drive means responsive to said drive signal for supplying said primary current to the primary winding of said induction motor; and
open loop compensating means interposed in series between said first instruction signal setting means and the primary windings of said induction motor for compensating for the delay of response of said field flux to said first instruction signal; said open loop compensating means comprising a transfer function of a linear advanced system.

4,259,630
AC MOTOR CONTROLLER

Jimmie W. Killian, Niantic, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 6, 1978, Ser. No. 958,462
Int. Cl.³ H02P 5/28, 3/18; H03K 17/56; H02M 1/12
U.S. Cl. 318—807 **9 Claims**



1. A motor controller for achieving quiet operation of an AC motor comprising in combination

a pair of lines adapted to be energized by one phase voltage of a three phase power supply;

first and second controlled rectifiers connected in series across said lines,

said first and second rectifiers being poled in one direction;

third and fourth controlled rectifiers connected in series across said lines,

said third and fourth rectifiers being poled in an opposite direction;

a center-tapped autotransformer connected between the junction of said first and second rectifiers and the junction of said fourth and third rectifiers;

means for connecting a phase winding of said motor between said center-tap and one of said lines; and

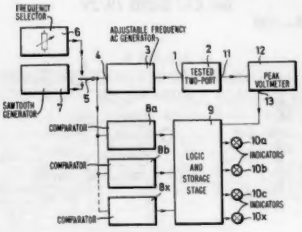
means for selectively gating said first, second, third and fourth rectifiers "on" in a sequence such that said winding is energized with a multiplicity of pulses during each half cycle of the phase voltage present across said lines.

4,259,631
METHOD AND ARRANGEMENT FOR MEASURING THE ATTENUATION-VERSUS-FREQUENCY CHARACTERISTICS OF TWO-PORTS

Klaus Volkmann, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Felten & Guilleaume Carlswerk AG, Cologne, Fed. Rep. of Germany

Filed Jan. 25, 1979, Ser. No. 6,500
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1978, 2809154
Int. Cl.³ G01R 27/00
U.S. Cl. 324—57 SS **5 Claims**

1. A device for quickly performing simple frequency-response measurements on two-ports, the device comprising, in combination, a controllable-frequency constant-output-voltage A.C. voltage generator having an output for connection to the input of a two-port, and furthermore having a frequency-control input; a sawtooth generator furnishing a sawtooth signal to the frequency-control input to cause the frequency of the A.C. voltage generator to be continuously varied; a peak-value-storing digital meter having an input for connection to the output of such two-port and also having a control-signal output for furnishing a control signal dependent upon the detection of a peak value by the meter; a set of at least three comparators having inputs connected to receive the sawtooth signal and having respective reference levels such as to define at least four successive frequency ranges; a set of indicator elements, one for each of the at least four successive frequency ranges; and logic and storage circuit means having a set of inputs connected to the output of the comparators, a set of

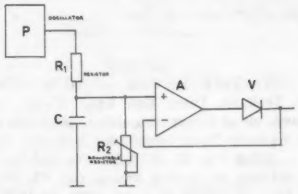


outputs connected to the indicator elements and a control input connected to receive said control signal, and operative for causing different ones of the indicator elements in said set of indicator elements to become activated depending upon which one of said frequency ranges contains the peak value registered by the peak-value-storing meter.

4,259,632
CONTINUOUS ACTION CAPACITIVE MOISTURE MEASURING APPARATUS

Ari J. Ahtiainen, Helsinki, Finland, assignor to OT-tehdas Oy, Finland

Filed Nov. 13, 1978, Ser. No. 960,068
Claims priority, application Finland, Nov. 18, 1977, 773492
Int. Cl.³ G01R 27/26
U.S. Cl. 324—61 R **5 Claims**



1. Apparatus for measuring the moisture of granular material comprising:

a series circuit including a measuring capacitor having a capacitance which varies as a function of moisture content, and a resistor coupled in series with said measuring capacitor;

oscillator means for generating a voltage of substantially stable frequency and amplitude, said voltage being applied to said circuit;

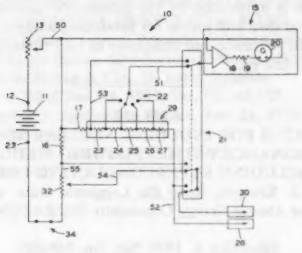
an operational amplifier serially coupled to a diode to constitute an ideal diode, the latter being coupled across said measuring capacitor; and

an adjustable resistor coupled across said measuring capacitor whereby the resistance of said adjustable resistor is adjustable to calibrate the capacitance of said capacitor.

4,259,633
METHOD AND APPARATUS FOR MEASURING THE MOISTURE CONTENT OF WOOD

Clifford M. Rosenau, Willow Street, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Jul. 25, 1978, Ser. No. 927,887
Int. Cl.³ G01R *27/02, 27/26*
U.S. Cl. 324—65 R **1 Claim**

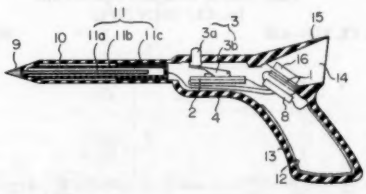


1. A method of determining the wood moisture content of different species of woods comprising the steps of:
(a) connecting a source of voltage potential through a set of electrodes across a sample of a particular wood species whose moisture content is to be measured;
(b) correcting the voltage potential supplied by said source to compensate for reverse voltage effects inherent in each individual type of wood species being tested, said voltage potential being applied at or above the critical level for the development of reverse voltage effect, which critical level is that voltage potential above which the reverse voltage effect of the wood species remains essentially constant;
(c) measuring one or more of the electrical properties of the circuit connected to the source and electrodes;
(d) correlating the measured electrical properties of said circuit with wood moisture content.

4,259,634
VOLTMETER OF THE LIQUID CRYSTAL DISPLAY TYPE

Tsuneo Okamoto, Hasuda, and Toshio Wakao, Kodaira, both of Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo; Kawamura Institute of Chemical Research, Saitama and Wakao Kogei Kabushiki Kaisha, Tokyo, all of, Japan

Filed Feb. 13, 1979, Ser. No. 11,909
Claims priority, application Japan, Feb. 17, 1978, 53-18541[U]
Int. Cl.³ G01R *31/00*
U.S. Cl. 324—74 **3 Claims**

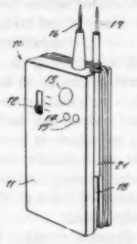


1. A voltmeter of the liquid crystal display type, said voltmeter comprising an electrically insulated casing, a detecting electrode secured to its forward end, a liquid crystal display element within the casing electrically connected to said detecting electrode, a grounded electrode within the casing electrically connected to said liquid crystal display element, and a window at the rear end of said casing for viewing the operation of said liquid crystal display element therethrough, said casing further including piezoelectric unit and a pressurizing mechanism so that the normal operation of said liquid crystal display element can be confirmed through said window by applying a voltage to said liquid crystal display element, said voltage being produced in said piezoelectric unit when said piezoelectric unit is flexed by said pressurizing mechanism wherein a condenser is disposed between, and electrically connected to, said detecting electrode and said liquid crystal display element, said condenser consisting of an electrically insulated tubular body having one closed end, an elongate internal electrode encased within said tubular body, and a tubular external electrode provided externally in contact with said tubular body.

4,259,635
ELECTRICAL CONTINUITY AND VOLTAGE TESTING DEVICE HAVING A PAIR OF PROBES SPACED FOR INSERTION INTO AN ELECTRICAL SOCKET

William R. Triplett, c/o Bluffton Products, Inc., P.O. Box 87, Bluffton, Ohio 45817

Filed Jun. 8, 1979, Ser. No. 46,854
Int. Cl.³ G01R *1/06, 1/04, 1/06*
U.S. Cl. 324—149 **1 Claim**

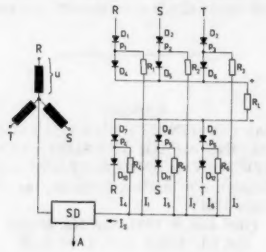


1. An electrical testing device, comprising in combination, a case, an electrical circuit inside said case, said circuit extending between a pair of exterior probes, a first of said probes being rigidly affixed to said case, and a second of said probes being on an end of a flexible uncoiled extension cord extending from said case, a groove extending around an outer side of said case, said extension cord fitting into said groove when wound around said case, receiving means on said case for inflexibly holding said probe to said case in an operational position parallel to said first probe and spaced therefrom a distance equal to the spacing of the contacts of an electrical socket, whereby said testing device can be used both with the cord wound and the second probe held to the case as well as with the cord unwound and the second probe extended from the cord, said second probe including a rigid elongated handle, said receiving means comprising an elongated groove formed along one side of the case, the mouth of the groove being slightly narrower than the handle to provide a snap fit of the handle in the elongated groove, so as to maintain the handle rigidly positioned parallel to the case and to prevent flexible movement of the handle when in said elongated groove, said handle including a shoulder portion which abuts against the case when the handle is positioned in the elongated groove and is located at a position on said handle such that the second probe extends substantially the same distance from the case as said first probe for maintaining the proper positioning of the second probe with respect to the first probe, and wherein said uncoiled extension cord is of such a length that when wound around said case groove, the entire length of the cord is utilized without any unused slack portion and without disturbing the locating of the shoulder portion on the case.

4,259,636
MONITORING DEVICE FOR SEMICONDUCTOR RECTIFIERS

Werner Buser, Basel, and Hendrik Hoitink, Windisch, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Dec. 28, 1978, Ser. No. 973,929
Claims priority, application Switzerland, Jan. 4, 1978, 68/78
Int. Cl.³ G01R *31/22*; G08B *21/00*
U.S. Cl. 324—158 D **5 Claims**



1. A monitoring device for semiconductor rectifiers, which are located in a three-phase current bridge circuit connected to a three-phase power source, comprising:

said bridge circuit comprising a plurality of rectifier branches, each branch having at least two pairs of semiconductor rectifiers per phase connected in series between a respective phase and a load, each pair having a series connection point to which is connected one side of a respective resistor, each resistor having a common value and the other sides thereof tied together at a common point to allow vector addition of all the currents flowing through said resistors; and

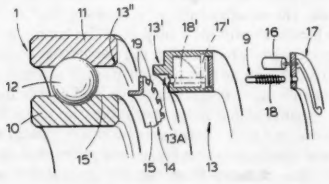
a current sensitive detector coupled to said common point for detecting if said vector current is non-zero;

wherein, when the semiconductor rectifiers are intact, the vector sum of all current flowing through the resistors is zero, as detected by said current sensitive detector circuit.

4,259,637
MECHANICAL ASSEMBLIES EMPLOYING SENSING MEANS FOR SENSING MOTION OR POSITION

Edward J. Bloomfield, Stroud, and Frederick S. Penman, Minsterworth, both of England, assignors to Ransome Hoffmann Pollard Limited, Chelmsford, England

Filed Jul. 18, 1978, Ser. No. 925,671
Claims priority, application United Kingdom, Jul. 22, 1977, 30895/77; Dec. 14, 1977, 52119/77
Int. Cl.³ G01P *3/48*
U.S. Cl. 324—166 **22 Claims**



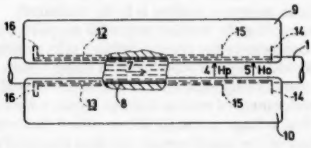
1. In a bearing assembly comprising first and second relatively movable bearing races, rolling elements located between the races, means mounted to the first race for rotary movement therewith and sensing means mounted to the second race for sensing the rotary movement of said means, the improvement comprising:

said means mounted to the first race comprises a toothed metal disc, and said sensing means is supported by carrier means connected directly to said second race, and wherein said sensing means comprises oscillatory circuit means including as a primary component an inductive element composed of a coil on a ferrite rod which is directly energized to produce an electromagnetic field which is influenced by the passage of the teeth of said toothed disc, and means for producing a signal dependent on said influence and indicative of said rotary movement of the first race.

4,259,638
APPARATUS FOR INDUCING NUCLEAR MAGNETIC RESONANCE WITHIN FLOWING MEDIUMS INCLUDING SUPERCONDUCTING COILS

Gottfried J. Krueger, Reno die Leggiuno, Italy, assignor to European Atomic Energy Community (EURATOM), Luxembourg

Filed Oct. 6, 1978, Ser. No. 949,095
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1977, 2745039
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—306 **3 Claims**

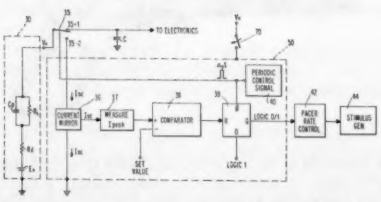


1. An apparatus for inducing nuclear spin resonance within a flowing medium contained within a conduit comprising a magnetic assembly including a pair of superconducting coils, the faces of which extend along opposite sides of a length of the conduit, a first region of the coils being constructed to produce a relatively greater magnetic flux density across a first section of said length of conduit, a second region of the coils being constructed to produce a relatively lesser magnetic flux density across a second section of said length of conduit, and a single cryostat containing said pair of superconducting coils.

4,259,639
CIRCUIT AND METHOD FOR DETECTING BATTERY SOURCE END OF LIFE

Alexis C. M. Renirie, Nijmegen, Netherlands, assignor to Vitatron Medical B.V., Dieren, Netherlands

Filed Nov. 3, 1978, Ser. No. 957,475
Int. Cl.³ G01N *27/42*
U.S. Cl. 324—430 **40 Claims**



1. A self monitoring power source, having a battery source having a resistance-use characteristic with a linear component which increases substantially linearly with battery usage and a non-linear component which increases sharply after a certain

usage, said characteristic having a knee caused by said non-linear component, in combination with detecting means connected to said battery source for detecting the occurrence of said knee and providing a signal indicating that said knee has occurred.

4,259,640

PROCESS AND DEVICE FOR DETERMINING A CHEMICAL DEICER ON A ROAD

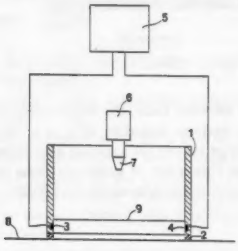
Gaëtan della Faille d'huysse, Brussels; Jacques Clausse, Waterloo, and Louis Boxus, Sint-Stevens-Woluwe, all of Belgium, assignors to Solvay & Cie., Brussels, Belgium

Filed Jun. 18, 1979, Ser. No. 49,157

Claims priority, application France, Jun. 21, 1978, 78 18780; Jan. 12, 1979, 79 00921

Int. Cl.³ G01N *27/42*

U.S. Cl. 324—439 **10 Claims**



1. Process for determining a chemical deicer on a road, comprising: positioning a shell of predetermined cross section on the road; introducing into the compartment delimited by the shell and the road, a fixed amount of solvent for said chemical deicer to form a layer of solution; and measuring an electrical parameter of the resulting layer of solution.

4,259,641

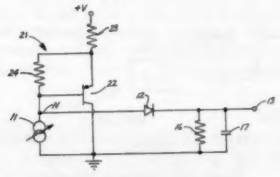
LINEARIZED DETECTOR/RECTIFIER CIRCUIT

Donald W. Carow, 201 W. California Ave., Apt. 316, Sunnyvale, Calif. 94086

Filed Dec. 11, 1978, Ser. No. 968,309

Int. Cl.³ H03D *1/10*; H02M *7/06*

U.S. Cl. 329—101 **9 Claims**



1. In a rectifier/detector circuit: a non-linear rectifier delivering an output voltage which is a non-linear function of the input voltage applied thereto, a node point connected to the input of the rectifier, means for delivering a signal current to the node point, and amplifier means responsive to the node point voltage with a feedback connection between the output of the amplifier means and the node point for adjusting the node point voltage to maintain a linear relationship between the signal current and the output voltage of the rectifier.

4,259,642

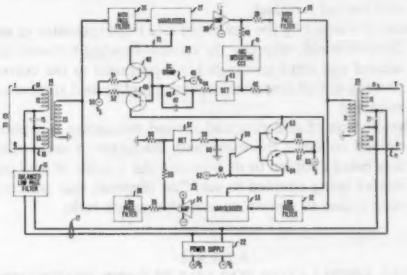
REPEATER FEEDBACK CIRCUIT

Jeffrey H. Derby, New York, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 29, 1978, Ser. No. 974,379

Int. Cl.³ H03F *3/68*

U.S. Cl. 330—288 **2 Claims**



1. A control circuit having two different output signals and comprising two amplifiers each having a different input signal characterized by

a first current mirror comprising a pair of transistors connected in common at their base electrodes to the output of a first of said amplifiers,

a second current mirror comprising a pair of transistors connected in common at their base elecrodes to the output of a second of said amplifiers,

substantially identical resistances connected between the emitter electrodes of each pair and a common voltage,

the collector from one transistor in the first current mirror providing one output signal,

the collector from the other transistor in the first current mirror being connected to the collector from one transistor in the second current mirror for providing the second output signal, and

the collector from the other transistor in the second current mirror being connected in a feedback path to a reference input of the second amplifier.

4,259,643

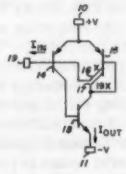
CURRENT GAIN AMPLIFIER CELL

Dennis M. Monticelli, Fremont, and Peter Lefferts, San Martin, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 25, 1979, Ser. No. 6,418

Int. Cl.³ H03F *3/04, 3/08*

U.S. Cl. 330—288 **5 Claims**



1. A current gain cell comprising:

a first control current terminal;

second and third controlled current terminals connectable to a source of potential;

a three-stage common emitter amplifier having an output coupled to its input, two of said three-stages employing transistors complementary to the third-stage transistor,

said three-stage common emitter amplifier including current attenuation means having an attenuation ratio that is small relative to the open loop current gain of said amplifier and an attenuation ratio dependent upon geometric configurations in said transistors;

means for coupling said attenuation means to cause the attenuated current to flow in said first terminal;

means for coupling the emitters of said two transistors to said second terminal;

means for coupling the emitter of said third transistor to said third terminal, whereby the current flowing between said second and third terminals is proportional to the current flowing in said first terminal multiplied by said attenuation ratio and

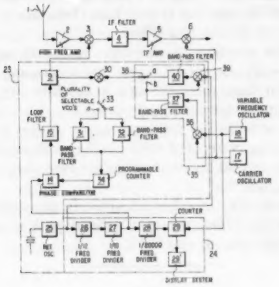
wherein one of said first and second transistors is a plural ratioed collector transistor with the larger of said collectors being coupled to its base and the smaller of said collectors being coupled to said first terminal, said collector ratio acting to determine said attenuation ratio.

4,259,644

LOCAL OSCILLATOR FOR MULTI-BAND RECEPTION HAVING SINGLE CRYSTAL REFERENCE OSCILLATOR

Takashi Iimura, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1979, Ser. No. 7,604
Int. Cl.[3] H03L 7/16; H04B 1/26
U.S. Cl. 331—2 **9 Claims**



1. In a local oscillator having a variable frequency oscillator and a carrier frequency oscillator for use in communication systems that transmit and/or receive signals on multiple frequency bands, the improvement of

one crystal reference oscillator;

converter means for mixing the outputs of at least said variable frequency oscillator and said carrier frequency oscillator to produce an output having a frequency corresponding to the receiving frequency; and

a phase-locked loop circuit including

a plurality of voltage control oscillators corresponding to the number of receiving frequency bands;

mixing means for mixing the output of a predetermined one of said voltage control oscillators corresponding to a predetermined one of said frequency bands with the output of said converter means to produce an output of fixed frequency corresponding to said one frequency band; and

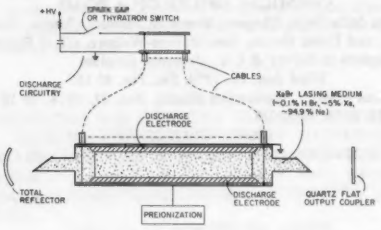
phase comparator means responsive to the phase of the output signal from said mixing means and the phase of the output from said one crystal reference oscillator to provide a control signal for said one voltage control oscillator whereby said one crystal reference oscillator may be employed with all of said plurality of voltage control oscillators.

4,259,645

HIGH ENERGY XEBR ELECTRIC DISCHARGE LASER

Robert C. Sze, Santa Fe, and Peter B. Scott, Los Alamos, both of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 10, 1979, Ser. No. 28,778
Int. Cl.[3] H01S 3/22
U.S. Cl. 331—94.5 G **11 Claims**



1. In an XeBr excimer laser, the improvement comprising:

a XeBr lasing medium including HBr as a bromine donor;

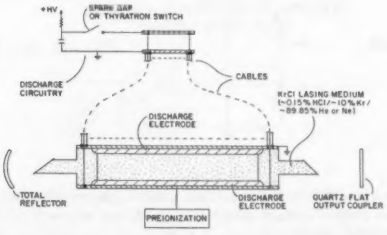
electric discharge means for exciting said lasing medium to minimize the formation of molecular ions such that high output energies are produced by said XeBr excimer laser.

4,259,646

HIGH ENERGY KRCL ELECTRIC DISCHARGE LASER

Robert C. Sze, Santa Fe, and Peter B. Scott, Los Alamos, both of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 10, 1979, Ser. No. 28,740
Int. Cl.[3] H01S 3/22
U.S. Cl. 331—94.5 G **11 Claims**



1. In a KrCl excimer laser, the improvement comprising:

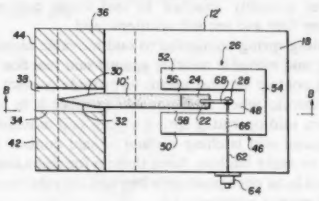
a KrCl lasing medium including HCl as a halogen donor;

electric discharge means for exciting said lasing medium to minimize the formation of molecular ions such that high output energies are produced by said KrCl excimer laser.

4,259,647
MILLIMETER WAVE IMAGE GUIDE INTEGRATED OSCILLATOR

Yu-Wen Chang, Rancho Palas Verdes, and Yiu C. Ngan, Los Angeles, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 20, 1979, Ser. No. 67,975
Int. Cl.³ H03B *7/14, 9/14*
U.S. Cl. 331—96 **12 Claims**



1. A millimeter wave image guide integrated oscillator, comprising in combination:

a metal substrate having a conductive surface defining an image plane;

an image guide member in the form of a length of dielectric material having a relatively low propagation loss to signals applied thereto in the millimeter frequency range, said image guide member including a layer of metallization on one surface thereof which is bonded to said conductive surface;

an air filled cavity structure formed from a body of dielectric material having a predetermined number of metallized outer surfaces, bonded to said conductive surface defining a cavity region thereby and including an opening through which one end of said image guide member projects into the cavity region a predetermined distance and additionally including decoupling means in the form of an elongated separation slot on either side of said image guide for decoupling the image guide from the cavity region for proper modal propagation of millimeter waves in the image waveguide;

a millimeter wave solid state oscillator package bonded to said conductive surface and located in said cavity region and including means coupled through the metallized dielectric material of said cavity structure for receiving externally applied electrical power for energizing said oscillator package; and

an image guide to metal waveguide transition consisting of a portion of said metal substrate and a metal body attached thereto, said body having a channel of rectangular cross section formed in one surface thereof, said channel being adjacent said conductive surface to form a hollow metal waveguide section and into which the opposite end of said image guide member projects a predetermined distance.

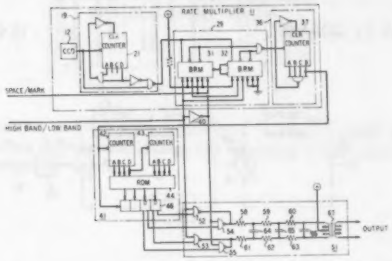
4,259,648
ONE-BIT FREQUENCY-SHIFT-KEYED MODULATOR

Cecil W. Farrow, Highlands, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 11, 1979, Ser. No. 56,531
Int. Cl.³ H04I *27/12*
U.S. Cl. 332—9 R **6 Claims**

1. A modulator for generating frequency shift signals representing binary data signals wherein the carrier portion of the binary data signals is derived from stored binary digits produced in a sequence in response to a pulse train, the modulator is characterized by lookup table means **(41)** for defining a binary digit sequence having an accumulation representing the amplitudes of a series of points on a theoretical sinusoidal wave, the lookup table means is further arranged to generate each binary digit and its complement in response to the occurrence of each pulse in the pulse train; and

output driver means **(51)** connected to receive the binary digit and their complements from the lookup table means, the output driver means including an output transformer **(67)** having a center tapped primary, each of the two portions of the primary being driven by one of a first pair

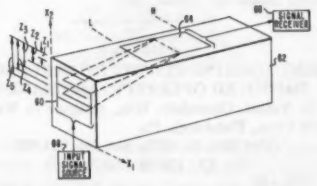


of single ended buffers to provide a balanced arrangement **(52** and **53)** responsive to each binary digit and its complement, and low-pass filtering means **(58–66)** disposed between each of the two single ended buffers and the primary of the output transformer to provide a sinusoidal wave output at the secondary of the output transformer directly from the binary digit sequence.

4,259,649
ELECTROACOUSTIC DELAY LINE APPARATUS

John de Klerk, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 26, 1979, Ser. No. 61,100
Int. Cl.³ H03H *9/40, 9/38, 9/13*
U.S. Cl. 333—144 **6 Claims**



1. In electroacoustic apparatus for delaying an input signal having a known bandwidth of frequencies, the combination of

a delay line made of piezoelectric material having a beam steering pure mode axis and having a first surface and a second surface,

a first transducer responsive to the input signal and including a plurality of electrode elements arranged in a plurality of arrays of interleaved interdigital grids of electrode elements coupled with the first surface of the delay line for generating acoustic wave energy within the delay line and directed along said beam steering axis toward the second surface,

a second transducer positioned on the second surface for receiving the generated acoustic wave energy from the first surface,

with the spacing between the respective electrode elements of each said array of the first transducer having a predetermined relationship to said known bandwidth of frequencies of the input signal to focus the generated acoustic wave energy in relation to said beam steering axis and on the second transducer at a predetermined portion of the

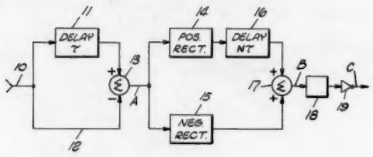
second transducer in relation to the respective frequencies of the input signal.

4,259,650

SIDELOBE REJECTION FILTER

Thomas H. Donahue, Glendale, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,963
Int. Cl.³ H03H *7/30, 7/01*
U.S. Cl. 333—166 **11 Claims**



1. A filter for reducing time sidelobes in an input signal, said input signal including a plurality of said sidelobes each having a period τ, said filter comprising:

delay means coupled to receive said input signal for delaying said output signal by τ;

a subtraction circuit having two inputs and an output, one of said inputs being responsive to the delayed output of said delay means;

means coupling the other of said subtraction circuit inputs to said input signal;

first means responsive to said subtraction circuit output for capturing the positive portion of the signal thereat;

second means responsive to said subtraction circuit output for capturing the negative portion of said signal thereat;

second delay means coupled to receive the output of one of said first or second means; and

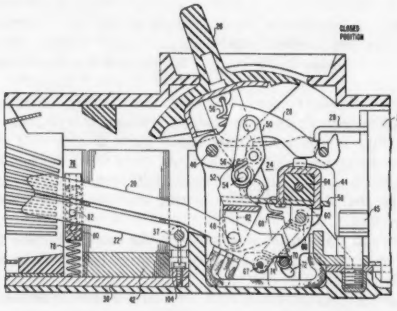
adder means coupled to the output of said second delay means and to the output of the other of said first and second capturing means.

4,259,651

CURRENT LIMITING CIRCUIT INTERRUPTER WITH IMPROVED OPERATING MECHANISM

Miguel B. Yamat, Greendale, Wis., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 16, 1978, Ser. No. 951,939
Int. Cl.³ H01H *75/12, 9/20*
U.S. Cl. 335—16 **14 Claims**



1. A current limiting circuit interrupter, comprising:

separable contacts;

a mechanism frame;

contact support means supporting one of said contacts and pivotally attached to said frame, said contact support means comprising a reaction surface and a latching surface;

conductor means connected to said contacts for connecting said contacts in series circuit relation with an electrical circuit being protected, said conductor means arranged to generate magnetic flux to apply electrodynamic force to said contact support means in a direction tending to separate said contacts when electrical current flows through said conductor means;

a member movably attached to said frame and movable between first and second positions; and

an operating spring connected to said movable member and urging said movable member against said reaction surface of said contact support means to provide contact closing force thereto when said movable member is in said first position, said operating spring urging said movable member against said latching surface of said contact support means to apply latching force thereto for maintaining said contacts in an open position when said movable member is in said second position;

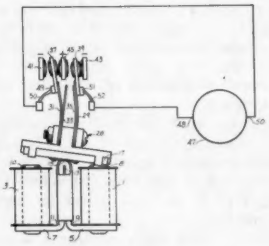
a severe overcurrent condition through said conductor means generating sufficient electrodynamic force to move said contact support means to separate said contacts and displace said movable member from the first to the second position.

4,259,652

REVERSING RELAY FOR PERMANENT MAGNET DC MOTOR

Richard W. Mattson, Rossford, Ohio, assignor to Eltra Corporation, Toledo, Ohio

Filed Apr. 30, 1979, Ser. No. 34,108
Int. Cl.³ H01H *50/54*
U.S. Cl. 335—128 **13 Claims**



1. A switch having first, neutral and second positions, and a set of movable contacts being driven to said first position and to said second position by a driver means operably connected to said set of movable contacts, a first of said set of contacts being displaced by said driver means when said switch is driven by said driver means to its first position and remaining stationary when said switch is driven by said driver means to its second position, and a second one of said contacts remaining stationary when said switch is driven by said driver means to its first position and displaced when said switch is driven by said driver means to its second position, and including selectively operable force augmenting means disposed adjacent to said set of contacts, a first of said force augmenting means disposed adjacent to said first of said set of contacts, operable when said switch is in its first position to provide an augmenting force for the first displaced contact against a first mating contact and inoperable when said switch is driven to its second position, and a second of said force augumenting means disposed adjacent to said second of said set of contacts, inoperable when said switch is driven to its first position and operable to provide an augmenting force for said second displaced contact

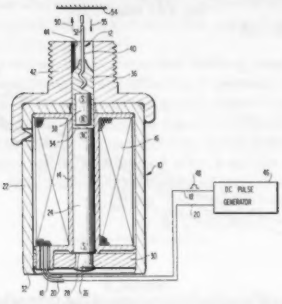
against a second mating contact when said switch is driven to its second position.

4,259,653

ELECTROMAGNETIC RECIPROCATING LINEAR ACTUATOR WITH PERMANENT MAGNET ARMATURE

James J. McGonigal, Binghamton, N.Y., assignor to Magnetic Laboratories, Inc., Hallstead, Pa.

Filed Nov. 22, 1977, Ser. No. 853,958
Int. Cl.[3] H01F 7/08
U.S. Cl. 335—230 **4 Claims**



1. A spring-less reciprocating electromagnetic linear actuator comprising:

a housing;

a substantially cylindrical electromagnetic coil mounted in said housing and having a central passageway extending along the coil axis;

a ferromagnetic pole piece disposed in the passageway to form an air gap at one end of said passageway;

a permanent magnet armature disposed in the air gap for movement along the coil axis, one end of said armature normally being held against the adjacent end of said pole piece by magnetic attraction when said coil is de-energized;

means for energizing said coil, for only a predetermined time period, with electric current to form in said adjacent end of said pole piece a magnetic pole of the same polarity as that of said one end of said permanent magnet armature to repel said armature away from said adjacent end in a first direction; and

means for blocking the travel of said armature in said first direction after a predetermined travel distance and for causing said armature to rebound in the opposite direction towards said adjacent end of said pole piece;

said predetermined time period being less than the time required for said armature to move said predetermined travel distance, so that the rebounding armature is magnetically attracted to, and held against, said adjacent end of said pole piece, said coil being de-energized during rebounding of said armature.

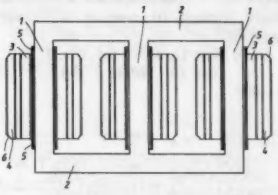
4,259,654

FLUX CONTROL IN TAPE WINDINGS

Erik Persson, Vesteras, and Johnny Sundin, Ludvika, both of Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

Filed Apr. 30, 1979, Ser. No. 34,508
Claims priority, application Sweden, May 2, 1978, 7804989
Int. Cl.[3] H01F 15/04
U.S. Cl. 336—84 R **6 Claims**

1. A power transformer or reactor comprising a core containing magnetic material and having legs and yokes and comprising windings including a tape-formed conductor material arranged concentrically around a core leg, the innermost of the windings having a first portion located nearest the core leg which has an axial length greater than the length of all of the remaining portion of the winding located radially outside said



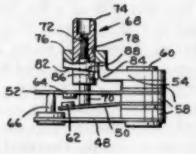
first portion, said first portion forming a cylindrical shield for controlling the magnetic leakage flux appearing axially outside the ends of the winding.

4,259,655

ADJUSTABLE THERMOSTAT

Charles A. Balchunas, Bethany, Conn., assignor to General Electric Company, New York, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,831
Int. Cl.[3] H01H 37/26
U.S. Cl. 337—361 **3 Claims**



1. In a stacked thermostat assembly including a lower heat deformable blade, a conductive intermedite stiff spring blade, a conductive upper less stiff spring blade, with all blades supported secured, and spaced apart at one end by interposed insulators, and electrical contacts on said conductive blades with means transmitting movement between the heat deformable blade to said upper blade to make and break an electric circuit and control heat to a medium sensed by said thermostat, the improvement in temperature setting control mechanism comprising,

a single structural bracket extending over said blades and mounted on and above said supported end with an enlarged integral portion on the free end,

said portion having a bore therethru forming an elongated bearing guide between the ends of and over said blades,

a control shaft rotatably supported in said bore and extending thru an opening in the upper blade to position said intermediate blade,

an arcuate cam surface with end stops formed on said integral portion facing said upper blade,

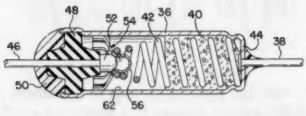
a cam follower on said control shaft and biased by said intermediate blade against said cam surface,

whereby the single bracket performs multiple functions of shaft bearing, cam surface and stops, and fixed locator of all structural parts.

4,259,656
THERMAL CUT-OFF DEVICE WITH AN ACTIVATING SPRING THAT IS HELD IN A PRESTRESSED CONDITION BY A THERMALLY FUSIBLE PELLET

Dennis D. Smith, Bartlett, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed May 11, 1979, Ser. No. 37,970
Int. Cl.[3] H01H *37/36*
U.S. Cl. 337—407 4 Claims

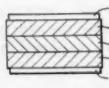


1. A thermal cut-off device comprising first and second axial leads, a cylindrical shaped housing for said device, means for supporting said axial leads at spaced apart positions at opposite ends of said housing, helical coiled spring means making electrical connection between said leads when said spring is subject to a prestressed tension that tends to elongate said spring with one end of said spring being permanently secured to said first lead and the other end of said spring being in contact with said second lead only as long as said spring is subject to said prestressed tension, and a thermally fusible pellet means constructed to melt at a predetermined temperature which intimately surrounds a portion of said spring means adjacent said first lead and retains said spring means when said spring means is in said prestressed tension condition until such time that said thermally sensitive pellet means melts, at which time said prestressed tension on said spring means is released and said electrical circuit between said leads is broken by the contraction of said spring means toward said first lead, wherein said housing is a metallic conductive can that is open at one end and is connected at its other end to a first one of said leads, an insulating member in said open end of said housing through which the second one of said leads passes, and a domed spring contact cup in contact with said first lead having spring fingers that are in resilient contact with the inner cylindrical wall of said housing, said spring cap contact means also having an enlarged dome which is inserted into the inner coils of said prestressed spring so as to make electrical contact therewith.

4,259,657
SELF HEAT GENERATION TYPE POSITIVE CHARACTERISTIC THERMISTOR AND MANUFACTURING METHOD THEREOF

Kazuo Ishikawa, and Kazuo Hosaka, both of Chitose, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 10, 1979, Ser. No. 37,951
Claims priority, application Japan, May 17, 1978, 53-59210
Int. Cl.[3] H01C *7/02*
U.S. Cl. 338—22 R 4 Claims

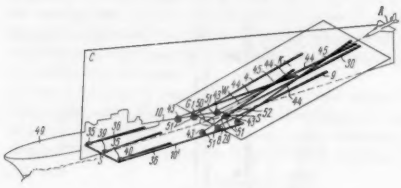


1. A self heat generation type positive characteristic thermistor comprising at least three layers of positive characteristic thermistor element bodies, the specific resistance of said layers being such that the specific resistance of the layers decreasing from the outermost layers to the center of said thermistor.

4,259,658
AIRCRAFT CARRIER TAKE-OFF AND LANDING SYSTEM AND METHOD FOR USING SAME

Nikolai G. Basov, ulitsa Dmitria Ulyanova, 3, kv. 113, Moscow; Igor A. Berezhnoi, ulitsa Tukhachevskogo, 253, kv. 18; Vyacheslav S. Vekshin, ulitsa Partizanskaya, 94, kv. 56, both of Kuibyshev; Vladimir A. Danilychev, ulitsa Profsojuznaya, 111, korpus 3, kv. 226, Moscow; Albert I. Elatontsev, ulitsa Sovetskoi Armii, 163, kv. 16; Vladimir V. Ignatiev, prospekt Kirova, 293, kv. 40, both of Kuibyshev; Vitaly D. Karyshev, ulitsa Sportivnaya, 5-25, kv. 5, and Alexandr K. Togulev, ulitsa Jubileinaya, 8, kv. 71, both of Kuibyshev, all of U.S.S.R.

Division of Ser. No. 622,762, Oct. 15, 1972, Pat. No. 4,063,218.
This application May 6, 1977, Ser. No. 794,650
Int. Cl.[3] B64F *1/20*
U.S. Cl. 340—26 16 Claims



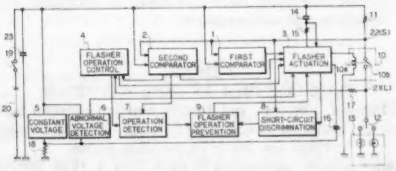
1. A take-off and landing system of the type which provides the pilot with information relating to the location of a desired landing platform and the glide slope thereto for ensuring take-off and landing of an aircraft on a take-off and landing platform which is a carrier ship landing deck, comprising:

at least one source of electromagnetic radiation said radiation being within preselected wavelength limits one of which is visible and said at least one source being positioned on said ship landing deck for producing at least one beam of said electromagnetic radiation which is a pencil beam with a divergence less than 5° which forms a symbol visible to the pilot of a specified configuration oriented in space which indicates the course and glide-slope of the estimated take-off or landing path of the aircraft and additionally indicates motions of the deck itself in the area of location of said at least one source of electromagnetic radiation.

4,259,659
FLASHER APPARATUS FOR VEHICLES

Hiromi Ariyoshi, Kariya, and Tiaki Mizuno, Toyota, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 24, 1980, Ser. No. 114,741
Claims priority, application Japan, Feb. 13, 1979, 54-15861
Int. Cl.[3] B60Q *1/38;* G08B *5/38, 21/00*
U.S. Cl. 340—73 3 Claims



1. In a turn direction indicating system of a vehicle in which one of two lamp groups is connectable to a battery through switch means by the closure of a turn direction indicating switch connected in series with said battery and said switch means, an apparatus comprising:

signal generating means responsive to said turn direction

indicating switch and effective to generate a train of flashing signals periodically during the closure of said turn direction indicating switch to said one of said two lamp groups;

actuating means responsive to said flashing signals and effective to render said switch means conductive and nonconductive periodically in response to said flashing signals;

current detecting means connected in series with said switch means and effective to produce thereacross a current detection signal proportional to the magnitude of said electric current;

discriminating means responsive to said current detection signal and a reference signal having a predetermined magnitude and effective to produce a discrimination signal indicating that said current detection signal is in excess of said reference signal; and

preventing means responsive to said flashing signals and said discrimination signal and effective to prevent said actuating means from actuating said switch means in response to said flashing signals during an interval of time longer than the period of each of said flashing signals when said discrimination signal is produced after a certain interval of time has passed from the beginning of each of said flashing signals.

4,259,660

RETRACTABLE ROOF TOP SIGN FOR AUTOMOTIVE VEHICLES

Dorothy Oliver, 5614 N. Armenia Ave., Tampa, Fla. 33603

Filed Oct. 10, 1978, Ser. No. 949,399

Int. Cl.[3] G08B *3/00, 5/36*

U.S. Cl. 340—120 **9 Claims**

1. A roof top traffic control sign device for mounting on the roof of an automotive vehicle comprising,

a main peripheral frame including a pair of spaced apart side rails and front and back transverse end rails connecting between respective pairs of end portions of said side rails,

a transverse message carrying sign assembly pivotally spanning a central open area defined by said side, front and back rails,

means to pivotally operate said transverse sign between a retracted horizontal position lying within the confines of said central area and a generally upright position whereby front and back surface areas provided on said sign assembly and carrying said messages are exposed for viewing purposes,

remote control means located within the drivers compartment of the vehicle for selective operation of said sign between said retracted and upright positions,

a longitudinally extending message carrying sign pivotally supported along each of said side rails,

linkage means whereby said longitudinally extending sign plates are pivoted between upright and retracted positions in response to like movement of said transverse sign and means to attach said sign device to the roof of a vehicle.

4,259,661

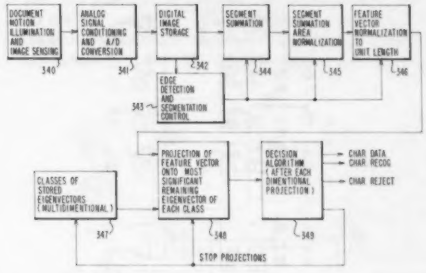
APPARATUS AND METHOD FOR RECOGNIZING A PATTERN

Robert Todd, Warren, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 1, 1978, Ser. No. 938,850

Int. Cl.[3] G06K *9/70*

U.S. Cl. 340—146.3 AQ **27 Claims**



1. An apparatus for recognizing a presented character as being in one of a plurality of predetermined classes of characters, said apparatus comprising:

generating means for generating a predetermined combination of signals representing the geometric configuration of the presented character, said predetermined combination of signals defining a normalized feature vector of the presented character;

first storage means for storing an array of signals formed from a plurality of prototype vectors representing each class of characters;

projecting means for projecting said feature vector onto a set of predetermined multidimensional subspaces characterizing the predetermined classes one dimension at a time, the subspaces being in the form of said stored array of signals wherein each of the subspaces approximates its corresponding prototype vectors in a least mean square error sense, said set of predetermined subspaces including sets of eigenvectors, each of said classes of characters being characterized by a set of eigenvectors and wherein said projecting means initially projects said feature vector on the most significant eigenvector of each of said sets of eigenvectors, said selector means selecting one of said characters if said algorithm is satisfied; and

selector means for selecting one of said characters as the presented character according to the pedetermined algorithm employing the results of said projections after each projection onto a dimension of the subspace, said selector means including logic means for allowing said projector means to project said feature vector on the next most significant eigenvector of each set and thereafter to the remaining eigenvectors in each set in the same fashion according to the significance of the eigenvectors in each set until said algorithm is satisfied.

4,259,662

THRESHOLD SETTING CIRCUIT

Hajime Yoshida, Tokyo, Japan, assignor to Hajime Industries, Ltd., Tokyo, Japan

Filed Aug. 29, 1979, Ser. No. 70,908

Claims priority, application Japan, Aug. 31, 1978, 53/106613

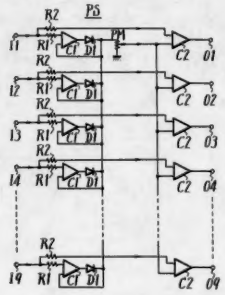
Int. Cl.[3] G06K *9/38*

U.S. Cl. 340—146.3 AG **3 Claims**

1. A threshold value setting circuit for use with a pattern discrimination circuit adapted in video apparatus in which an array of picture elements is scanned to provide corresponding picture element signals, said setting circuit comprising:

(a) a plurality of peak selectors and a threshold value setting means, each of said peak selectors having an input and

output, each of said inputs being arranged to receive a respective one of said picture element signals, said outputs being connected together and in common to said threshold value setting means, each of said peak selectors providing an output from its respective input unless reverse-biased by a higher output from one of the other peak selectors; and



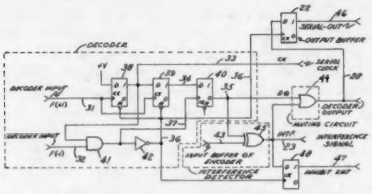
(b) a plurality of comparators, corresponding to the number of peak selectors, each comparator having a pair of inputs and an output, one input of each of said comparators being connected to said common threshold value setting means and another input of each of said comparators being connected to receive a respective one of the picture element signals.

4,259,663

CONTENTION INTERFERENCE DETECTION BY COMPARISON OF TRANSMITTED AND RECEIVED SIGNAL INFORMATION

Melvin G. Gable, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 7, 1979, Ser. No. 46,580
Int. Cl.[3] H04Q *9/00*; H04B *7/00*
U.S. Cl. 340—147 LP **5 Claims**



1. A synchronous data communication modem adapted to be connected to a communication medium shared by a plurality of other synchronous data communication modems, said communication modem having inputs for receiving a plurality of input signals representing input states, each input state being encoded into a unique one of a plurality of canonical forms transmitted over said communication medium, said modem comprising:

an encoding (modulator) means for inserting signal information in a transmitted signal;

a decoding means for extracting signal information from a received signal from said communication medium and provided a decoded output in one of a plurality of output states corresponding to said input states and classifying signals not of canonical form into one of the output states, the number of said output states being equal to the number of said input states;

a first storage buffer means coupled to said encoding means for temporary storage of transmitted signal information; and

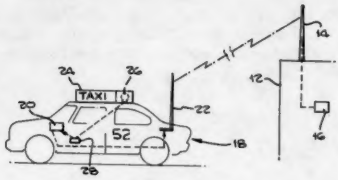
a comparator means connected to said first storage buffer for comparing information stored in said first buffer to that of the decoder output and for generating an interference detection signal due to contention by multiple transmitters over said communication medium if the compared information is not the same.

4,259,664

TAXICAB ROBBERY ALERTING SYSTEM

William F. Boisclair, Warner Robins, Ga., assignor to Tubill Enterprises, Inc., Grand Bay, Ala.

Filed Jun. 26, 1979, Ser. No. 52,446
Int. Cl.[3] G08B *1/08*; B60R *25/10*
U.S. Cl. 340—539 **10 Claims**



1. A taxicab robbery dual long-range robbery alerting and local identification system comprising:

warning lamp means for mounting on said taxicab for giving a warning signal which is not visible from within the taxicab;

means mounted in said taxicab for transmitting a radio signal providing a unique digital representation of the identity of the taxicab and for providing a continuous unique alert signal;

silent foot operable switch means mounted in the taxicab for the energization of both said warning signal and also for initiating the operation of said radio signals by the taxicab driver;

means for maintaining said warning lamp and said radio signals operating until they are intentionally turned off; and

means associated with a taxicab dispatch office for decoding said digital representation of the taxicab and for providing a display thereof;

whereby the taxicab dispatch personnel may alert the police as to the fact of a robbery in progress, the appearance of the taxicab and its approximate location, and positive local identification of the taxicab may be assured by the exterior warning lamp on the taxicab.

4,259,665

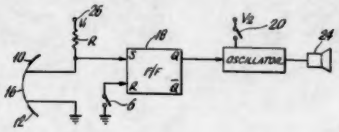
DRIVER SLEEP OR FATIGUE ALARM

John Manning, Santa Clara, Calif., assignor to RMR Systems, Inc., Santa Clara, Calif.

Filed May 29, 1979, Ser. No. 42,853
Int. Cl.[3] G08B *21/00*
U.S. Cl. 340—575 **5 Claims**

1. A sleep alarm for use in a vehicle, said alarm comprising first and second spaced conductive means adapted to be arranged on the steering wheel of the vehicle, and arranged as to be contacted by the hand of the driver, means for supplying a trickle of current through said first and second conductive means whenever the driver's hand firmly grips the steering wheel and said first and second conductive means, a solid state flip-flop circuit with its set terminal connected to one of said conductive means and placed in a first state when the driver's hand is firmly gripping the steering wheel and in a second state

when the driver's hand loses its firm grip on the steering wheel, and alarm means connected to said solid state flip-flop circuit



and being activated when said solid state flip-flop circuit is placed in said second state when the driver's hand loses it firm contact with said conductive means.

4,259,666

APPARATUS FOR DETECTING DEGRADATION OF CHARACTERISTICS OF ARRESTERS

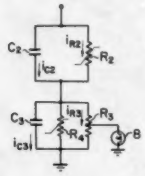
Shigeru Takahashi, Yokohama; Iwao Ohshima, Kawasaki; Masaki Honda, and Mizuho Yamashita, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Nov. 19, 1979, Ser. No. 95,606

Claims priority, application Japan, Nov. 21, 1978, 53/142832

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—647 **4 Claims**



1. Apparatus for detecting deterioration of characteristics of an arrester utilizing a characteristic element made of metal oxide type nonlinear resistor, said apparatus comprising a linear resistor and a capacitor which are connected in parallel between said characteristic element and ground, the impedances of said linear resistor and said capacitor being predetermined such that the product of the resistance of said characteristic element and an electrostatic capacitance in parallel therewith will be equal to the product of said impedances when resistive leakage current through said characteristic element reaches a predetermined value, and means responsive to a voltage drop across said linear resistor to display degradation of said characteristic element.

4,259,667

INFORMATION INTERCHANGE BETWEEN AN INTELLIGENT OPERATOR, INDICIA BEARING DOCUMENTS, AND RESPONSIVE APPARATUS

Harold J. Weber, 20 Whitney Dr., Sherborn, Mass.

Filed May 21, 1979, Ser. No. 40,496

Int. Cl.³ G09B *7/00*

U.S. Cl. 340—707 **14 Claims**

1. Information interchange apparatus functionally coefficient between an indicia bearing substrate and a responsive apparatus, including in combination:

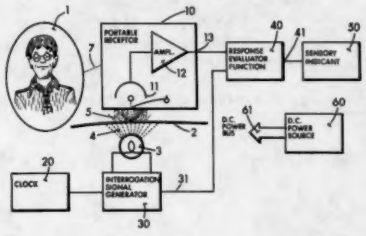
(a) a substrate comprised in the main of a sheet of material which is at least effectively translucent to rays of light energy;

(b) intelligence bearing symbolic stimuli provided as indicia means effectively supported by the said substrate;

(c) signal source means with subjacent proximateness relative to the indicia bearing obverse surface of the said substrate effective so as to provide primary light rays, which serve in part to transilluminate at least some part of the said indicia, thereby producing visible denotation of the indicia situation to an operator, and which produce secondary rays to effectively emit from some part of the substrate obverse surface;

(d) interrogation signal generator means coupled to said signal source means and effective to provide a unique sequential pulse train code pattern signal which serves as a source of excitation for the said signal source means;

(e) effective coaction between the said signal source means and the said interrogation signal generator such that the said primary rays occur as bursts of light energy faithfully representative of the value of the said excitation signal;



(f) receptor means including a translative input port effectively supported in variable superimposition relative to the said indicia bearing transilluminated substrate by the manipulative actions of an operator and effective as a translator of some part of the said secondary rays into a receptor pulse train signal the value of which substantially corresponds with the operator selected indicia weight;

(g) response evaluator function coupled effectively with at least the said interrogation signal generator means and the said receptor means and functional therewith so as to provide an indicative signal at an output terminal; and,

(h) d.c. power source coupled to the several essential elements comprising the said responsive apparatus so as to therefor provide operative energy.

4,259,668

TELEVISION SET/CALCULATOR INTERFACE INCLUDING EXCHANGEABLE KEYBOARD PANEL AND PROGRAM MEMORY CARTRIDGE

Kosuke Nishimura, Yamatokoriyama; Hirohide Nakagawa, Sakurai, and Isamu Haneda, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 14, 1979, Ser. No. 38,546

Claims priority, application Japan, May 15, 1978, 53-57830; May 15, 1978, 53-57831

Int. Cl.³ G06F *3/153*

U.S. Cl. 340—711 **9 Claims**

1. A combined home-use-television set/calculator system comprising:

a control unit including:

central processor means for conducting arithmetic calculations; and

display control means for displaying calculation results derived from said central processor means on an image screen of the home-use-television set;

a memory cartridge exchangeably secured to said control unit; and

a keyboard unit exchangeably connected and secured to said control unit for introducing desired information into said central processor means, wherein a specific memory and a specific keyboard unit are selected to operatively function relative to each other.

4,259,669

DETECTION SYSTEM

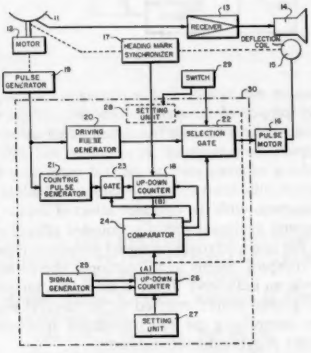
Hidetoshi Tanigaki, Kobe, Japan, assignor to Furuno Electric Co. Ltd., Hyogo, Japan

Filed Oct. 1, 1979, Ser. No. 80,951

Claims priority, application Japan, Oct. 6, 1978, 53-138221[U]; Nov. 17, 1978, 53-142697

Int. Cl.³ G01S 7/22

U.S. Cl. 343—5 EM **16 Claims**



1. An indicating apparatus of a detection system which displays on the face of a cathode-ray tube,. echo signals caused by search pulses transmitted successively in different directions from a transmitting and receiving unit rotated at constant speed and returned from obstacles, and a mark signal produced when the transmitting and receiving unit points in a predetermined direction, thereby displaying an image of the surrounding area and a radial reference marker thereover in a form of plan position indication, comprising:

(i) deflecting means mounted around the neck of the cathode-ray tube for rotation about an axis thereof, for deflecting the electron beam thereof,

(ii) a rotating shaft for rotating the transmitting and receiving unit in a horizontal plane at constant speed,

(iii) phase aligning means for aligning the phase of said deflecting means with that of said rotating shaft and for producing an output signal when said deflecting means and rotating shaft are aligned with one another,

(iv) a pulse motor for rotating said deflecting means,

(v) pulse generating means for producing a sequence of pulses in dependence upon the rotation of said rotating shaft,

(vi) first comparison signal generating means for storing a predetermined numerical value corresponding to the angle between a ship's heading direction and a reference bearing for producing a resulting value obtained by an addition or substraction operation performed with the change of the ship's course,

(vii) second comparison signal generating means for storing a specific numerical value set thereinto by the output signal supplied from said phase aligning means for producing a resulting value obtained by an addition or subtraction operation performed based on the sequence of pulses supplied from said pulse generating means,

(viii) comparing means for comparing the output values from said first and second comparision signal generating means with each other to produce resulting output signals, and

(ix) driving pulse generating means for producing a plurality of sequences of pulses respectively with different frequencies to be used for driving said pulse motor and for selecting a sequence of pulses with a frequency based on a corresponding output signal from said comparing means and supplying them to said pulse motor.

4,259,670

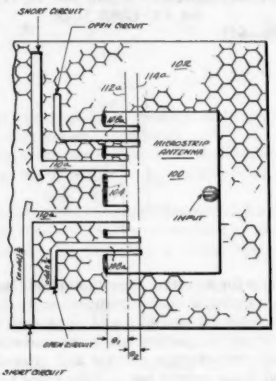
BROADBAND MICROSTRIP ANTENNA WITH AUTOMATICALLY PROGRESSIVELY SHORTENED RESONANT DIMENSIONS WITH RESPECT TO INCREASING FREQUENCY OF OPERATION

Frank J. Schiavone, Longmont, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed May 16, 1978, Ser. No. 906,665

Int. Cl.³ H01Q 1/38

U.S. Cl. 343—700 MS **28 Claims**



1. A broadband microstrip antenna comprising:

a conductive radiator patch spaced over an underlying conductive surface and having resonant dimensions corresponding to a first predetermined frequency of operation; and

series-resonant impedance means connected to plural predetermined locations on said radiator patch for automatically and progressively changing the effective resonant dimensions of the antenna and thereby permitting effective operation over a broader range of frequencies.

4,259,671

ANTENNA DEICING APPARATUS

Herbert L. Levin, Wyckoff, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 20, 1979, Ser. No. 68,090

Int. Cl.³ H01Q 1/02

U.S. Cl. 343—704 **8 Claims**

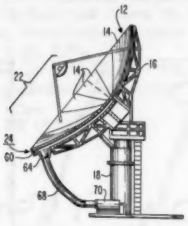
1. In an antenna construction including a concave radiation reflecting sheet member, said antenna being oriented in use so that at least a portion of said concave sheet member faces toward space away from earth and is receptive to falling snow which may be retained thereon, a deicing apparatus for heating said portion to melt and remove said snow comprising:

a manifold sheet member mounted spaced from the convex side of said reflecting sheet member over about said portion, said manifold sheet member facing and being joined

with said convex side to form a single manifold chamber therewith,

air inlet means for flowing heated air into said chamber at a single given chamber location, and

a plurality of settable spaced port means coupling said chamber to the ambient atmosphere and positioned along an upper edge of the manifold chamber to provide air flow within said chamber over said reflecting sheet member over substantially all said portions, said port means being



set at a sufficiently restricted flow area and spaced in a given position with respect to said inlet means flow area to provide an air head pressure within said chamber higher than ambient atmosphere to cause a flow of heated air over substantially all of said portion within said chamber,

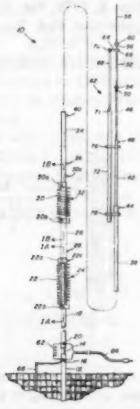
said chamber having a wall thereof approximately at the mid-section of said concave sheet member extending from one edge of said antenna to an opposite edge, said ports being located in said wall at spaced positions between said edges.

4,259,672

MULTI-BAND VERTICAL ANTENNA

Donald R. Newcomb, Lake Crystal, Minn., assignor to Butternut Electronics, San Marcos, Tex.

Filed Sep. 18, 1979, Ser. No. 76,571
Int. Cl.³ H01Q *9/14, 9/22*
U.S. Cl. 343—722 **12 Claims**



1. Vertical antenna resonating on five predetermined segments of the high-frequency spectrum comprising:

a. first resonator capacitor means vertically supported and comprising an eighty-seventy five meter resonator capacitor section and including an eighty-seventy meter resonator inductor connected in parallel across the top of said capacitor section whereby said resonator adjusts the center frequency of operation;

b. second resonator capacitor means vertically connected to said first resonator capacitor means and comprising a forty-meter resonator capacitor section and including a forty-meter resonator inductor connected in parallel across the top of said capacitor section whereby said resonator adjusts the center frequency of operation;

c. vertical radiating means including a stub means and connected to said second resonator capacitor means, said vertical radiating means comprising first, second, third, fourth, fifth, and sixth vertical radiating sectional elements internally secured to each of the other respective elements whereby the telescoping of said sections adjusts the center frequency of operation on twenty and ten meters and said stub means comprising a quarter wavelength long stub connected in parallel to said vertical radiating means towards an upper point whereby said stub telescopes to adjust the center frequency of operation; and

d. an impedance matching coil connected across said first resonator capacitor means and ground, a coaxial cable transmission line impedance matching section connected across said impedance matching coil, and said vertical antenna having a height in the range of twenty-five to twenty-six feet whereby a coaxial cable transmission line connects to said first resonator capacitor means and ground, and the entire vertical radiating length of said vertical antenna is active on four of said five high-frequency spectrum segments and said stub means decouples said vertical radiating means above said stub means thereby yielding a quarter wave vertical radiating means on the frequency corresponding to the length of said stub means.

4,259,673

STUB MATCHED ANTENNA AND METHOD OF FEEDING SAME

Harold Guretzky, 56-05 Clearview Exp., Bayside, N.Y. 11364

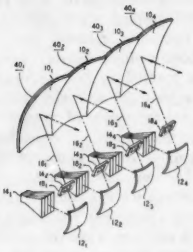
Filed Jun. 5, 1979, Ser. No. 45,640
Int. Cl.³ H01Q *9/18, 9/24*
U.S. Cl. 343—825 **20 Claims**

1. An antenna comprising a substantially straight vertical radiator, a driven element generally a quarter of a wavelength long at the desired operating frequency and closely spaced from said radiator, said element being defined by an integral, substantially straight part, coil means feeding and driving said element, said coil means being electrically coupled to a feedline and including a coil insulated from and perimetrically wound around said straight part such that said element, in conjunction with a portion of said vertical radiator, acts as a quarter-wave stub at the desired operating frequency, said coil adapted for selective indexing on said straight part thereby to allow the matching of the feedline impedance to the antenna impedance.

4,259,674
PHASED ARRAY ANTENNA ARRANGEMENT WITH FILTERING TO REDUCE GRATING LOBES

Corrado Dragone, Little Silver, and Michael J. Gans, Monmouth Beach Township, Monmouth County, both of N.J., assignors to Bell Laboratories, Murray Hill, N.J.

Filed Oct. 24, 1979, Ser. No. 87,746
Int. Cl.³ H01Q *15/02*
U.S. Cl. 343—909 **5 Claims**



1. A phased array antenna arrangement comprising
a plurality of reflectors (**10,12**) arranged in sequence along a feed axis of the system, each reflector comprising a curved focusing reflecting surface and a focal point, where each focal point can be either one of a real and an imaginary form;
and a feedhorn array (**14**) disposed on an image plane of the aperture plane of said antenna arrangement capable of launching a beam comprising a central ray (**16**) and a plurality of grating lobes
CHARACTERIZED IN THAT
the antenna system further comprises
a filtering means (**18**) disposed at one of the focal points of the plurality of reflectors, said focal point being a real focal point disposed between a pair of subsequent reflectors, said filtering means being capable of passing the central ray and blocking the plurality of grating lobes associated with the beam being launched from the feedhorn.

4,259,675
JET INK PROCESS

Ishwar R. Mansukhani, Neenah, Wis., assignor to Whittaker Corporation, Los Angeles, Calif.

Continuation of Ser. No. 17,241, Mar. 5, 1979, abandoned. This application Dec. 31, 1979, Ser. No. 108,366
Int. Cl.³ C08D *11/02*
U.S. Cl. 346—1 **3 Claims**

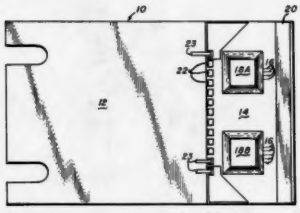
1. In a process for information recording comprising producing a fine jet of colored aqueous liquid, directing the jet of colored liquid onto a recording medium, and modulating the density of the jet by applying an electric field in accordance with information to be recorded, the improvement comprising the step of including in the liquid a humectant selected from the group consisting of dialkyl phosphonates and dialkyl phosphites, and mixtures thereof.

4,259,676
THERMAL PRINT HEAD

Peter C. Salmon, and David M. Salmon, both of Los Altos, Calif., assignors to Santek, Inc., Los Altos, Calif.

Filed Jul. 30, 1979, Ser. No. 61,902
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **15 Claims**

1. A thermal print head comprising:
a base plate;
a substrate slab of electrically insulating material mounted upon said base plate, deposits on the upper surface of such slab including a plurality of isolated individual resistors comprising thin film deposits of electrically resistive material arrayed linearly across said slab, a plurality of isolated electrically conductive traces equal in number to and respectively connected at one end to each of said resistors, conductive means for delivering electrical potential to said resistors at points displaced from the connections of said traces, an electrically insulating strip encompassing the surface of said resistors, and a plurality of isolated electrically conductive leads;

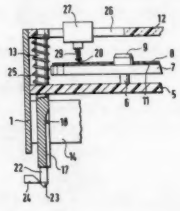


means for delivering electrical potential and data signals to said leads; and
at least one integrated circuit for controlling the electrical energy delivered to said resistors mounted upon such substrate slab, said integrated circuit being electrically connected to the opposite end from said resistors of each of said conductive traces and also connected to each of said conductive leads.

4,259,677
METHOD AND APPARATUS FOR RECORDING THE COMPRESSION PRESSURE OF INTERNAL COMBUSTION ENGINES

Peter H. Koch, Frankfurt am Main, and Bernhard H. Friebe, Runkel, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 8, 1979, Ser. No. 92,275
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1978, 2848613
Int. Cl.³ G01D *15/16, 9/00*; G01M *15/00*
U.S. Cl. 346—124 **17 Claims**



1. Method for recording the compression pressure of internal combustion engines, comprising in succession the steps of:
(A) Moving a stylus and a recording sheet relative to each other by a pressure-sensitive element,
(B) bringing the stylus and recording sheet into contact with each other during a part of the movement;
(C) subjecting the element to the compression pressure and pivoting one of the stylus and recording sheet from its position of rest into the maximum position determined by the compression pressure,
(D) bringing the stylus and recording sheet into mutual contact,

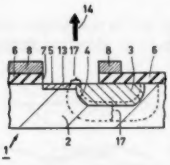
(E) relieving pressure from the element;
(F) whereby the deflected stylus or recording sheet is pivoted into its position of rest while producing a written line.

4,259,678

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING SAME, AS WELL AS A PICK-UP DEVICE AND A DISPLAY DEVICE HAVING SUCH A SEMICONDUCTOR DEVICE

Gerardus G. P. van Gorkom, and Arthur M. E. Hoeberechts, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 21, 1978, Ser. No. 971,767
Claims priority, application Netherlands, Jan. 27, 1978, 7800987
Int. Cl.³ H01L *29/90*
U.S. Cl. 357—13 **75 Claims**



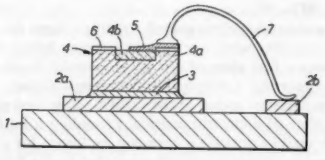
1. A semiconductor device used as a cathode for generating an electron flow comprising a semiconductor body having a p-n junction, a depletion zone of said p-n junction adjoining at least a surface of said semiconductor body, means for applying a reverse voltage across said p-n junction to generate avalanche multiplication of electrons from said semiconductor body, an electrically insulating layer provided on said surface of said semiconductor body, at least one aperture provided in said insulating layer for exposing at least part of said depletion zone, and electrode means formed on said insulating layer at an edge of said aperture for accelerating electrons through said aperture.

4,259,679

DISPLAY DEVICES

Terence F. Knibb, and Richard G. O'Rourke, both of Northampton, England, assignors to Plessey Handel und Investments A.G., Zug, Switzerland

Continuation-in-part of Ser. No. 869,151, Jan. 13, 1978, abandoned. This application Apr. 13, 1979, Ser. No. 29,879
Claims priority, application United Kingdom, Jan. 17, 1977, 1756/77
Int. Cl.³ H01L *33/00*
U.S. Cl. 357—17 **12 Claims**



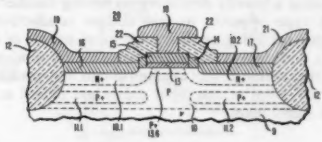
1. A display device comprising a substrate, a light emitting diode chip, said light emitting diode chip being bonded to said substrate, a plurality of metallic electrical connections, a number of said plurality of electrical connections being bonded to said substrate and a number being connected to said light emitting diode chip, at least some of said metallic electrical connections being electroplated with a layer of light absorbing material.

4,259,680

HIGH SPEED LATERAL BIPOLAR TRANSISTOR

Martin P. Lepselter, Summit, and Simon M. Sze, Murray Hill, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 17, 1980, Ser. No. 141,119
Int. Cl.³ H01L *29/04, 29/72*
U.S. Cl. 357—35 **9 Claims**



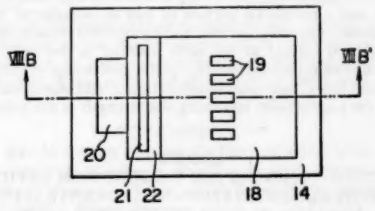
1. Semiconductor apparatus comprising a lateral bipolar transistor device structure in a semiconductive, single crystal silicon layer (**10**) of essentially moderate, first type conductivity having a pair of spaced apart localized zones (**10.1**, **10.2**) of second, opposite conductivity type forming, respectively, an emitter and a collector zone of said transistor at a major surface thereof is CHARACTERIZED BY a polycrystalline silicon electrode layer (**13**) of said first type conductivity located contiguous with a portion of the major surface of said single crystal silicon layer (**10**) in the space between said localized zones (**10.1**, **10.2**), said polycrystalline electrode layer (**13**) serving as the base electrode contact of said transistor device, and a base zone (**13.5**) of said first type conductivity higher than said moderate conductivity extending in said silicon layer (**10**) from one of said localized zones (**10.1**, **10.2**) to the other, said base zone (**13.6**) formed by diffusion of impurities from said polycrystalline layer (**13**) into a portion of single crystal layer (**10**) underlying said polycrystalline layer (**13**).

4,259,681

INTEGRATED CIRCUIT

Jun-ichi Nishizawa, Sendai, Japan, assignor to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

Continuation-in-part of Ser. No. 748,292, Dec. 7, 1976, abandoned. This application Jul. 3, 1978, Ser. No. 921,565
Claims priority, application Japan, Dec. 9, 1975, 50/146588
Int. Cl.³ H01L *27/02*
U.S. Cl. 357—41 **24 Claims**



1. A semiconductor integrated circuit structure formed in a single semiconductor chip having one principle surface and including a plurality of active elements, comprising at least one static induction transistor (SIT) as one of said active elements, and a transistor, having first and second portions defining a current path therebetween and a control portion for controlling current flow through said path, as another one of said active elements,

said static induction transistor including at least one drain comprised of a heavily-doped region having a certain

conductivity type formed in said chip adjacent said principle surface,

a first semiconductor region having said certain conductivity type and having a low impurity concentration; and a source composed of a heavily-doped region having said certain conductivity type formed in said chip adjacent, and being disposed adjacent said first semiconductor region opposite said drain for allowing a current to flow through said first region between said source and drain,

said integrated structure comprising means for functioning both as a gate structure for said SIT and as said second portion of said another of said plurality of active elements, including a heavily-doped region having another conductivity type opposite to said certain conductivity type, adapted for being applied with input signals of different levels and disposed adjacent to said first semiconductor region to define a short channel in said first semiconductor region is open at one input signal and closed at another input signal level.

4,259,682

SEMICONDUCTOR DEVICE

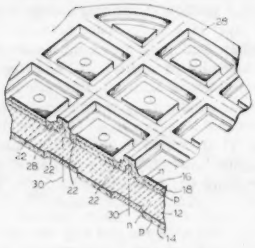
Hiroshi Gamo, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 789,271, Apr. 20, 1977, abandoned. This application Sep. 28, 1978, Ser. No. 946,828

Claims priority, application Japan, Apr. 27, 1976, 51/49008

Int. Cl.³ H01L *29/06, 29/747*

U.S. Cl. 357—55 **2 Claims**



1. A semiconductor device comprising a semiconductor pellet having a pair of main opposite faces and having at least on pn junction disposed therein, and a separating groove disposed in each of said main faces of said pellet and extending through said at least one pn junction, said separating groove in one of said main faces of said semiconductor pellet being in the form of a closed loop encircling a substantial portion of said pellet, and a peripheral portion of said semiconductor pellet around said separating groove, and a projection on said peripheral portion formed of the same material as the pellet and integral with the semiconductor pellet protruding beyond the one main face of said substantial portion of said semiconductor pellet for substantially increasing the strength of the pellet.

4,259,683

HIGH SWITCHING SPEED P-N JUNCTION DEVICES WITH RECOMBINATION MEANS CENTRALLY LOCATED IN HIGH RESISTIVITY LAYER

Michael S. Adler, Schenectady, and Victor A. K. Temple, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

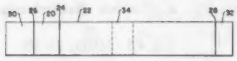
Continuation-in-part of Ser. No. 766,614, Feb. 7, 1977, abandoned. This application Aug. 21, 1978, Ser. No. 935,742

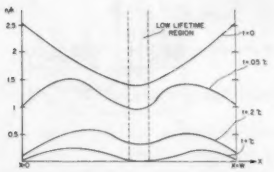
Int. Cl.³ H01L *29/167*

U.S. Cl. 357—64 **9 Claims**

1. In a PIN semiconductor diode exhibiting first and second stages of turn-off and including a layer of P type semiconductor material, a layer of intrinsic semiconductor material I, and a layer of N-type semiconductor material in a sandwich-like relationship, a P-I junction being formed between said P-type layer and said I layer, and an I-N junction being formed between said I layer and said N-type layer, said P-type layer and said N-type layer each having an electrical contact for connecting said diode to external electrical circuitry, the improvement comprising:

a region of reduced carrier lifetime situated within said intrinsic semiconductor layer including, and substantially limited to, the portion of the volume thereof in which the peak amount of carrier recombination occurs during the second stage of turn-off of said diode caused by changing a forward bias voltage applied to the electrical contacts of said diode to a reverse bias voltage, said region of reduced





carrier lifetime oriented generally perpendicular to the flow of current through said diode and generally situated near the middle portion of said layer of intrinsic semiconductor material, said intrinsic semiconductor layer including a first region exhibiting a carrier recombination lifetime greater than that of said region of reduced carrier lifetime and situated between said region of reduced carrier lifetime and said P-I junction, and a second region exhibiting a carrier recombination lifetime greater than that of said region of reduced carrier lifetime and situated between said region of reduced carrier lifetime and said I-N junction,

whereby carrier recombination during device turn-off is enhanced so as to result in decreased turn-off time.

4,259,684

PACKAGES FOR MICROWAVE INTEGRATED CIRCUITS

Douglas J. Dean, Reading; Patrick F. T. Linford, Basingstoke, and John Savage, Newbury, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

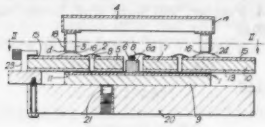
Filed Oct. 13, 1978, Ser. No. 951,219

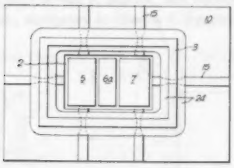
Int. Cl.³ H01L *23/02, 23/12, 39/02*

U.S. Cl. 357—74 **12 Claims**

1. In a microwave integrated circuit package for housing a microwave integrated circuit, said package being of the type comprising a first plate of dielectric material for at least indirectly supporting a microwave integrated circuit, a wall of dielectric material sealed to the surface of the first plate, and a second plate of dielectric material providing a lid for sealing over the wall to provide a hermetic enclosure for elements of a microwave integrated circuit supported by the first plate, the first plate of dielectric material carrying planar conductors which define at least one microwave transmission line which extends into the enclosure from outside for coupling to the enclosed circuit elements, the conductors which define the propagation path for each said transmission line being carried on the surface of the first plate to which the wall is sealed, the improvement wherein the package includes impedance compensating means on both sides of the wall for compensating in

a smoothly or progressively varying manner changes in the impedance of the transmission line as it traverses the wall such





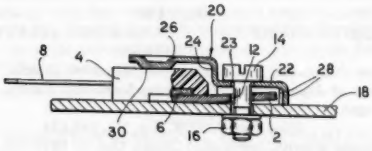
that the characteristic impedance of the transmission line remains constant or varies smoothly or progressively as it traverses the wall.

4,259,685

CLAMP FOR SECURING AN ENCASED POWER FRAME TO A HEAT SINK

Luigi Romano, Monza, Italy, assignor to SGS-ATES Componenti Elettronici S.p.A., Milan, Italy

Filed Mar. 8, 1979, Ser. No. 18,638
Claims priority, application Italy, Mar. 9, 1978, 21073/78[U]
Int. Cl.[3] H01L *23/02, 23/28, 23/42*
U.S. Cl. 357—81 **5 Claims**



1. In combination, a thermally conductive plate, a semi-conductor device resting on said plate in heat-transmitting contact therewith, and a clamp securing said device to said plate;

said device comprising a lead frame embedded in a four-sided resinous block and connected within said block to an IC chip, said chip being in contact with a metallic strip which has a plate-contacting lower surface substantially flush with the underside of said block, said device further including a set of conductors electrically connected to said frame and provided with elongate portions projecting from one side of said block remote from said strip;

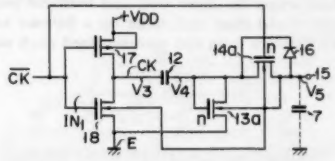
said clamp comprising a body of resilient sheet metal forming a four-sided base offset from said block with legs bent down on three sides of said base to rest on said plate on a side of said block opposite said remote side thereof, said body being further provided with a stepped tongue extending integrally from the fourth side of said base toward said remote side of said block, said tongue having a rising part substantially perpendicular to said base at said fourth side and a free extremity substantially parallel to said base, the latter having an aperture traversed by a fastener engaging said plate, said extremity overlying said block in cantilevered fashion and having a downward projection bearing upon said block for holding said strip in firm contact with said plate.

4,259,686

CIRCUIT FOR PRODUCING A POLARITY-REVERSED VOLTAGE WITH OPPOSITE POLARITY TO THAT OF A POWER SUPPLY VOLTAGE

Yasoji Suzuki, Ayase, and Tetsuya Iida, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Oct. 2, 1978, Ser. No. 947,432
Claims priority, application Japan, Oct. 3, 1977, 52-118784
Int. Cl.[3] H03K *5/00*
U.S. Cl. 307—262 **9 Claims**



1. A circuit for producing a polarity-reversed voltage with opposite polarity to that of a power supply voltage comprising:

an inverter supplied with said power supply voltage and controlled by first clock pulses, said inverter inverting said power supply voltage in response to said first clock pulses for producing second clock pulses having a first voltage level with the same polarity as said power supply voltage and a second voltage level of which the magnitude is lower in absolute value than the absolute value of said first voltage level;

a capacitor coupled to receive said second clock pulses;

a first impedance varying FET of which the source-drain path is connected between the output terminal of said capacitor and a reference potential point with a reference voltage level, said first impedance varying FET being so controlled as to take a low impedance state when said second clock pulses are at said first voltage level and a high impedance state when said second clock pulse is at said second voltage level;

a second impedance varying FET having a channel with the same conductivity type as said first impedance varying FET, connected at the source to the output terminal of said capacitor and being supplied at the gate with clock pulses having the same polarity as said first clock pulses and synchronized with said first clock pulses, said second impedance varying FET being so controlled as to take a high impedance state when said second clock pulses are at said first voltage level and a low impedance state when said second clock pulses are at said second voltage level; and

a polarity-reversed voltage output terminal connected to the drain of said second impedance varying FET and through which a polarity-reversed voltage with opposite polarity to that of said power supply voltage is withdrawn.

4,259,687

BEAM INDEX COLOR CATHODE RAY TUBE

Kinya Shinkai, Yokohama; Susumu Akazawa, Sakura, and Kiyonori Tominaga, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

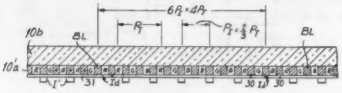
Filed Nov. 21, 1979, Ser. No. 96,374
Claims priority, application Japan, Nov. 24, 1978, 53-145684; Nov. 28, 1978, 53-146835; Nov. 29, 1978, 53-148069
Int. Cl.[3] H04N *9/22*
U.S. Cl. 358—67 **16 Claims**

1. A color television receiver of the beam index type comprising:

a cathode ray tube having a screen composed of groups of color phosphor elements arranged side-by-side to have a predetermined pitch in a repetitive pattern across an image area of the screen with each of said color phosphor

elements of each group emitting light of a respective color different from the color of light emitted by each of the other elements of the respective group when excited by an electron beam, and gun means providing an electron beam scanning across said screen during scanning intervals to excite said color phosphor elements in succession and adapted to modulate the density of said electron beam in accordance with a received color signal;

means responsive to said electron beam scanning across said screen to provide index and mode set signals at respective locations of said beam on said screen which are interspersed across the latter with said locations being uniformly spaced from each other by a distance non-integrally different from said predetermined pitch and with



adjacent locations corresponding to said mode set signal being spaced apart by an integral multiple of said pitch;

gating means receiving color signals corresponding to said color phosphor elements, respectively, and being controllable for determining which of said color signals is received by said gun means for modulating said electron beam;

gate pulse generating means responsive to said index signal for providing sequentially repeated gating signals to said gating means at a frequency corresponding to that with which said beam scans said groups of color phosphor elements; and

mode set means responsive to said mode set signal to control the phase and sequence of said gating signals.

4,259,688

TV CAMERA

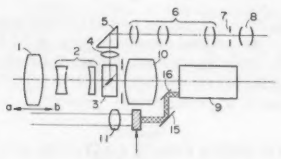
Mitsuhiro Tokuhara, Chigasaki; Tetsuo Sueda, Chofu; Kazuo Tanaka, Tokyo, and Ryusho Hirose, Yokosuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1979, Ser. No. 45,409

Claims priority, application Japan, Jun. 6, 1978, 53-68053

Int. Cl.³ H04N *4/18*

U.S. Cl. 358—107 **3 Claims**



1. A TV camera comprising:

an image pick-up device for forming an image of an object for TV display on an object image forming portion of the image pick-up screen of the image pick-up device, and

a range finding optical system for forming a range finding image of said object, including information of the distance between said object and the TV camera, on a range finding image forming portion of said image pick-up screen, said range finding image forming portion being in non-overlapping disposition with respect to said object image forming portion.

4,259,689

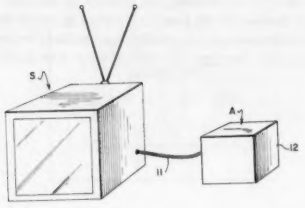
TELEVISION ADVERTISING EDITING SYSTEM

Edgar L. Bonner, 325 E. Main Ave., Taylorsville, N.C. 28681, and Nelson A. Faerber, 900 Sixth Ave., South Naples on The Gulf, Fla. 33940

Filed May 11, 1979, Ser. No. 38,378

Int. Cl.³ H04N *5/48*

U.S. Cl. 358—165 **10 Claims**



1. A television advertising editing system comprising, in combination, control means for controlling the audio output of a television set, video signal detecting means, means for connecting said video signal detecting means to a video circuit of said television set for receiving the video signal in said television set, monitoring means coupled to said video signal detecting means for monitoring the video signal received by said video signal detecting means to provide an output voltage signal indicating the absence of picture information in the video signal during the interval between program material and commercial material, voltage responsive means coupled between said control means and said monitoring means and responsive to the output voltage signal to actuate said control means for controlling the audio output of the television set.

4,259,690

MULTI-PICTURE TUNING SCHEME OF TELEVISION RECEIVER

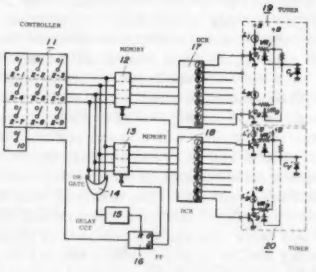
Kaoru Nakanishi, Izumisano, and Masahiro Kanchi, Osaka, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 3, 1978, Ser. No. 948,632

Claims priority, application Japan, Oct. 6, 1977, 52-120726; Oct. 6, 1977, 52-120727

Int. Cl.³ H04N *5/48*

U.S. Cl. 358—183 **10 Claims**



8. A channel selection device for use in a television receiver of the type which provides at least two kinds of television pictures from two different television signals simultaneously displayed on the same screen tube employed therein, comprising:

a channel selection switch assembly for generating channel selection information;

first and second tuning means responsive to said channel selection information, each of said tuning means for receiving a selected television signal; and

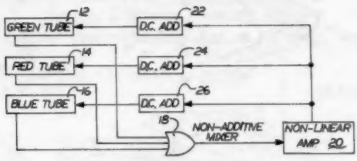
switching means for selectively interchanging the channel selection information from said channel selector switch assembly to either of said first or second tuning means.

4,259,691

BEAM CURRENT CONTROL SYSTEM FOR IMAGE PICKUP TUBE

John F. Monahan; Charles F. Smiley, and Arthur C. Wymer, all of Quincy, Ill., assignors to Harris Corporation, Melbourne, Fla.

Filed Dec. 13, 1978, Ser. No. 969,009
Int. Cl.³ H04N *3/16*
U.S. Cl. 358—219 **7 Claims**



4. Apparatus for use in a system including at least one image pickup tube having a target upon which a light image may be directed and electron beam generating means for scanning said target with an electron beam so as to cause a video signal to be generated at said target, comprising:

nonlinear amplifier means responsive to said video signal for non-linearly amplifying said video signal to derive a feedback signal therefrom,

said amplifier means having a smaller but non-zero gain for video signals less than a predetermined magnitude than for those greater than said predetermined magnitude, and

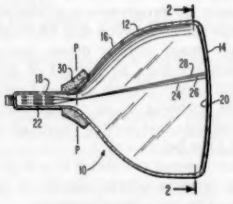
beam current control means for utilizing said feedback signal to vary the current level of said electron beam from a reference level.

4,259,692

PROJECTION KINESCOPE AND METHOD OF OPERATION

Ralph J. D'Amato, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 22, 1979, Ser. No. 87,448
Int. Cl.³ H04N *5/74*
U.S. Cl. 358—237 **4 Claims**



1. A projection kinescope comprising:

an evacuated envelope having a faceplate and a single color-emitting continuous phosphor screen on the inner surface of the faceplate;

an electron gun for generating a plurality of electron beams in a substantially vertical plane, the beams being directed to strike the screen at vertically-separated positions; and

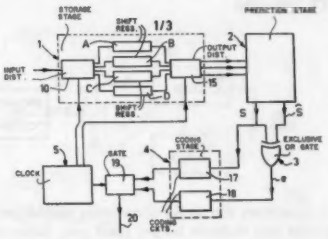
a delay line associated with one of the electron beams directed to strike the screen above another of the electron beams, the delay time of the delay line being sufficient to repeat the video information imparted by the electron beam first striking the same portion of the screen.

4,259,693

DEVICE FOR COMPRESSING BINARY SIGNALS

Gilles Aaron, Saint Michel sur Orge, and Guy Hekimian, Brou, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 18, 1979, Ser. No. 49,528
Claims priority, application France, Jun. 28, 1978, 78 19278
Int. Cl.³ H04H *1/00*; G08C *9/00*
U.S. Cl. 358—261 **5 Claims**



1. A device for compressing binary signals, particularly intended to be included in a system for the coded facsimile transmission of documents with the object of reducing the transmission time by reducing the length of the series of binary signals associated with the sequentially scanned lines of picture elements of the document to be transmitted in the form of a monochrome picture, characterized in that it comprises:

(a) a storage stage for dividing these series of binary signals into groups of n consecutive series which are sequentially entered in the store, the first series of the stored group present in the store being the last series of the previously stored group;

(b) a prediction stage for using the first and the last series of groups present in the stage for consecutively allotting a predicted binary signal to each of the other (n−2) intermediate series of this group, this predicted signal being determined on the basis of a prediction frame comprising, in the considered intermediate series, at least the previously predicted binary signal which is nearest to the considered original binary signal and, in each of the first and the last series, at least the original binary signal nearest to the considered original binary signal in the intermediate series;

(c) a substitution stage for replacing each original binary signal of the (n−2) intermediate series by a binary difference signal resulting from the comparison of the original binary signal and the predicted binary signal associated therewith;

(d) a coding stage comprising a first circuit for coding the first and the last series of the group present in the store by means of a one-dimensional code of the "run-length code" type and a second circuit for coding the (n−2) intermediate series of the binary difference signals designed to perform the following consecutive operations on each (n−2) intermediate series:

dividing the series into blocks comprising q binary difference signals;

the determination in each block of the number r of the least frequent binary difference signals;

the transmission of a code word corresponding to this number r;

the transmission of the block without coding it when r exceeds a predetermined value;

transmitting the addresses of these signals in the block when r differs from zero and is lower than or equal to v,

the first address being defined by t bits with respect to the beginning of the block and each following address with respect to the preceding address and with t − 1 bits;

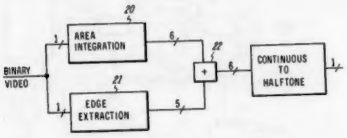
(e) a clock stage having for its function to ensure synchronization of the operations of the other stages.

4,259,694

ELECTRONIC RESCREEN TECHNIQUE FOR HALFTONE PICTURES

Henry H. Liao, Rocsmoor, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 24, 1979, Ser. No. 69,444
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—283 **8 Claims**



1. A rescreener circuit for converting one bit per pixel input image data into multiple bit per pixel gray scale output image data comprising:

integrator means for summing the number of input bits of one state surrounding and including the instant input bit,

an edge extraction means for determining an edge correction value by calculating the rate at which the input image bits surrounding and including the instant input bit are changing in color in the vertical and horizontal directons, and

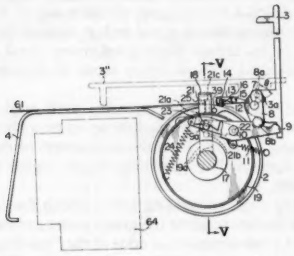
means for adding the sum produced by said integrator means and the value produced by said edge extraction means to produce said multiple bit per pixel gray scale output.

4,259,695

FACSIMILE SHEET CLAMPING DEVICE

Ryunosuke Nakano, Yokohama, Japan, assignor to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan

Filed Dec. 3, 1979, Ser. No. 99,485
Int. Cl.³ H04N *1/08*; G01D *15/14*; B65H *5/04*; B41L *11/00*
U.S. Cl. 358—291 **3 Claims**



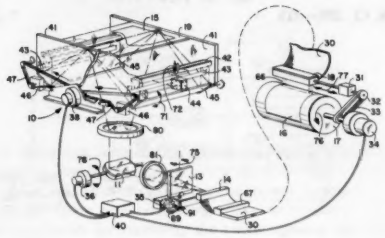
1. A facsimile device having a drum mounted rotatably, and a first and a second bars movable toward and away from the drum surface, said first and second bars being adapted, when moved toward said drum surface, to cooperate with said drum surface in clamping therebetween the leading and the trailing ends of a sheet, respectively, characterized by comprising mechanical means and electric means adapted to cooperate with each other in controlling the operation of said first and second bars in response to a manual opening and closing operation of a drum cover or the like means, whereby a sheet placed at a predetermined position is automatically picked up and wound round said drum merely by a manual closing operation of said drum cover or the like, and is automatically released and returned to said predetermined position merely by manual opening operation of the same.

4,259,696

APPARATUS AND METHOD FOR JET DROP COPYING WITH AN ARRAY OF JETS AND PHOTODETECTORS

Suresh C. Paranjpe, Dallas, Tex.; Arthur Cox, Chicago, Ill.; Burton W. Scott, Plano; Eugene Nodov, Richardson, both of Tex., and Richard Sutera, Dayton, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Sep. 12, 1979, Ser. No. 75,063
Int. Cl.³ H04N *1/10, 1/24*
U.S. Cl. 358—296 **18 Claims**



1. Jet drop copying apparatus comprising:

document support means for supporting an original document to be copied,

illumination means for creating an elongated beam of illuminating light and directing said beam of light toward said document support to create an illuminated strip extending laterally across said document,

a cyclically operating illumination scanner for scanning said beam of light and causing said illuminated strip to move repetitively across said document in a longitudinal direction,

imaging means for observing at least that portion of said document including said strip and projecting an image of the viewed area upon an image plane,

an image scanner operating in synchronism with said illumination scanner so that the light reflected from said illuminated strip is directed toward an imaging window within said image plane,

a photodetector array positioned within said window and comprising a series of photodetectors for sensing image light levels at spaced positions extending along the length of said window,

image shifting means operable in synchronism with said image scanner for progressively producing relative lateral shifting movement between said photodetectors and said image; said image shifting means having an operating cycle which produces an amount of shifting movement equal to the viewing width of one of said photodetectors during one scanning cycle of said image scanner and which continues said shifting until all portions of said document have been viewed.

Printing control means connected to said photodetectors for generating printing control signals in response to light levels sensed by said photodetectors,

copy support means for supporting a print receiving member,

a jet printing head operable under control of said printing signals for projecting drops of printing liquid along paths toward a series of laterally spaced printing positions on said print receiving member,

printing drive means operating in synchronism with said image scanner to produce cyclical relative movement between said jet drop printing head and said copy support means such that the printing drops which are deposited at

said spaced positions define a series of longitudinally extending printing tracks, and

print shifting means operable in synchronism with said image shifting means for progressively shifting said printing positions in the lateral direction; said print shifting means having an operating cycle which shifts said printing positions a distance equal to the printing width of one of said printing tracks during one driving cycle of said printing drive means and which continues said shifting until solid printing coverage of said printing member has been achieved.

4,259,697

METHOD FOR IMPROVED REPRODUCTION OF EDGES FORMED BY ENGRAVING OF SCREENED PRINTING FORMS

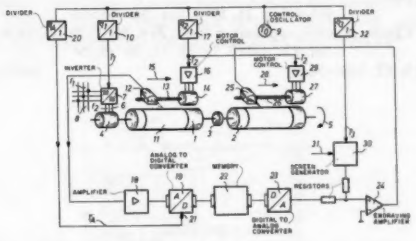
Juergen Doelves, Kiel, Fed. Rep. of Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed Sep. 1, 1978, Ser. No. 939,053

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1977, 2739977

Int. Cl.³ H04N *1/24, 1/40*

U.S. Cl. 358—299 **10 Claims**



1. A method for improved reproduction of edges in originals during the engraving of screened printing forms, wherein an engraving tool of an electromagnetic engraving member controlled by an engraving signal cuts a plurality of cups arranged in a printing screen into said printing forms, the method comprising the steps of:

(a) generating a screen signal which represents the printing screen, supplying said screen signal to an engraving tool and said screen signal causes an oscillating movement of said engraving tool at the frequency of the screen signal, whereby the engraving tool in each case effects its largest deflection in the direction of the printing form at a periodically recurrent amplitude value of the screen signal,

(b) scanning the original image point by point to obtain an analog image signal,

(c) converting said analog image signal to a digital image signal,

(d) sampling said image signal at a frequency which is higher than the frequency of the screen signal to obtain digital principal image values corresponding to the first image points in the original and additional intermediate digital image values corresponding to image points of the original lying between said first image points in the scanning direction,

(e) reconverting said principal digital image values and said intermediate digital image values into an analog image signal, whereby a single signal jump which occurs during scanning an edge in the original is divided up into consecutive partial signal jumps, said reconverted image signal determining the depth of the cups to be engraved and the density level to be reproduced,

(f) superimposing said reconverted analog image signal onto said screen signal to obtain said engraving signal such that the partial signal jumps associated with the principal image values are superimposed at the instants of the recurrent amplitude values of the screen signal, whereby the cups representing an edge in the original are phase shifted relatively to the printing screen toward the higher level of density so as to accomplish improved reproduction of edges.

4,259,698

SPEED AND PHASE SERVO CONTROL APPARATUS

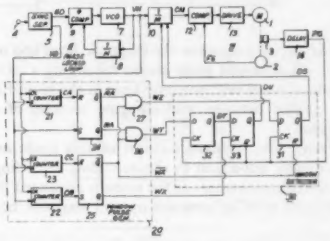
Shinji Takada, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 26, 1979, Ser. No. 15,106

Claims priority, application Japan, Feb. 27, 1978, 53-21732

Int. Cl.³ G11B *21/02*

U.S. Cl. 360—70 **28 Claims**



11. Servo control apparatus for controlling a driven member, comprising:

a source of reference signals having a frequency determinative of the speed at which said member is driven;

means for deriving signals representing the actual speed at which said member is driven;

a servo loop responsive to said reference signals and to the speed representing signals for driving said member at a speed determined by the frequency of said reference signals;

means for deriving signals representing the actual position of said driven member;

window pulse generating means for generating window pulses corresponding to desired positions of said driven member;

means for detecting when the position representing signals occur within the duration of said window pulses; and

modulating means for modulating the frequency of said reference signals if said position representing signals occur outside said duration of said window pulses, to adjust the speed and position of said driven member until said member is driven such that the actual positions thereof correspond to said desired positions.

4,259,699

MAGNETIC RECORDING MEDIUM GUIDING APPARATUS

Shigeru Yoshida, Chichibu, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 872,780, Jan. 27, 1978, abandoned. This application Mar. 9, 1979, Ser. No. 18,911

Claims priority, application Japan, Jan. 28, 1977, 52-8319; Feb. 28, 1977, 52-23675

Int. Cl.³ G11B *15/00, 17/00*

U.S. Cl. 360—88 **6 Claims**

1. A device for guiding a manually urged recording medium, comprising:

first supporting guide means having an elongate planar surface second supporting guide means having an elongate planar surface and facing said first mentioned surface,

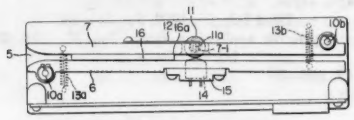
a base,

means associated with said base and said guide means for supporting one end of one of said guide means and the

opposite end of the other of said guide means for pivotal movement relative to said base,

bias means urging the free end of each of said first and second guide means toward the pivoted end of the other of said guide means, respectively,

a magnetic head for reading or writing information out of or into a recording medium, said head being mounted on one of said guide means,



means disposed opposite the magnetic head and mounted on the other of said guide means for urging a recording medium toward said magnetic head as the recording medium is guided between said elongate surfaces of said guide means,

whereby, said opposed surfaces of said guide means automatically self-adjust to accommodate recording media of different thicknesses as the name is advanced for read out or write in of information by said magnetic head.

4,259,700

APPARATUS FOR RECORDING AND REPRODUCING INFORMATION ON MAGNETIC TAPE

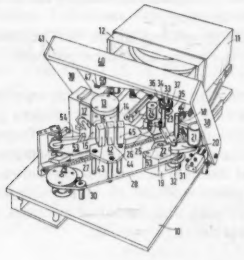
Dieter Gause, Weiterstadt; Theo Wolf, Rossdorf, and Wolfgang Fell, Seeheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 9, 1979, Ser. No. 10,620

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1978, 2807272

Int. Cl.[3] **G11B** *15/00, 17/00*

U.S. Cl. 360—95 **11 Claims**



1. Apparatus for transducing information on or from magnetic tape having

a support (**10**); means to support two axially stacked reels holding magnetic tape, preferably contained in a cassette;

tape guiding elements to guide the tape to follow a predetermined path;

electromagnetic transducer elements (**13, 14, 15, 16; 43, 44, 45**) positioned along said predetermined path;

a tape driving capstan (**18**);

a pressure roller (**21**);

means (**20**) for selectively urging said pressure roller against said capstan to feed tape upon rotation of the capstan,

the capstan (**18**) being positioned on the support (**10**) and so located along said predetermined path that the magnetic tape comes to lie between the drive capstan and said pressure roller;

an operating handle (**41**) to effect threading of the tape to become positioned in said predetermined path, or restoring of tape, after having been positioned in said path, in the respective reels; and

drive means (**101, 102, 103**) coupled to the operating handle and further coupled to said drive capstan (**18**) to rotate the tape capstan upon operation of the handle, and hence positively feed tape from a respective reel to permit said tape to follow said predetermined path without stress on the tape separate from the pull exerted on the tape by the drive capstan; and further including pressure roller engagement control means (**20, 32, 48, 70, 71**) coupled to said drive means (**101, 102, 103**) and moving said pressure roller towards the capstan, with the tape therebetween, upon movement of the operating handle (**41**) and thereby provide the positive tape feed.

4,259,701

DEVICE FOR INSERTING AND EJECTING A CASSETTE IN A CASSETTE-TYPE TAPE RECORDER/PLAYBACK APPARATUS

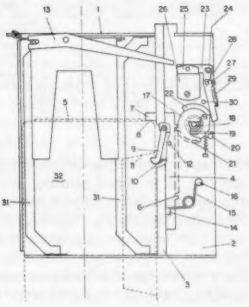
Vittorio Pera, Rome, Italy, assignor to Autovox S.p.A., Rome, Italy

Filed Jun. 21, 1979, Ser. No. 50,576

Claims priority, application Italy, Jun. 30, 1978, 50118 A/78

Int. Cl.[3] **G11B** *19/18, 15/10, 15/24*

U.S. Cl. 360—96.5 **6 Claims**



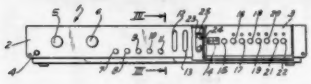
1. Device for inserting and ejecting the cassette in a cassette type tape recording/playback apparatus utilizing a tape cassette enclosed within a frame and characterized by the fact of comprising: a sliding block engageable through step means with the cassette and axially slidable in the direction of insertion and of ejection of the cassette, having thereon a rack toothed section; a drum, freely rotatable about a pivot pin fixed onto the frame, having thereon a toothed section and a stop tooth integral with its periphery, said toothed section being engaged with said rack section during the sliding movement of said block; a torsion spring engaged onto said drum, apt to be loaded during the sliding movement of the block in the direction of insertion of the cassette and which releases, driving the drum and causing the sliding movement of the block, in the direction of ejection; a holding mechanism electrically controlled by a holding relay, having thereon a hook apt to permit the rotation in a first direction of said drum during the movement of the block in the direction of insertion, to load said torsion spring, to block the rotation of the drum in the opposite direction, by means of said stop tooth, up to the point when the holding relay is in an energized condition, the de-energizing of the relay causing the unblocking of the engagement between the hook and the tooth, so that the unwinding of the torsion spring causes the rotation of the drum in the opposite direction, driving said block in the direction of ejection of the cassette.

4,259,702

FRONT-LOADING CASSETTE TAPE MACHINE

Wolfgang Franke, Langen, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 21, 1979, Ser. No. 41,402
Claims priority, application Fed. Rep. of Germany, May 24, 1978, 2822584
Int. Cl.[3] G11B 15/18, 15/26, 23/04
U.S. Cl. 360—96.5 4 Claims



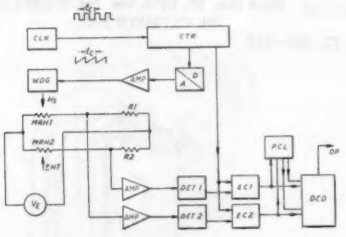
1. A cassette tape machine, comprising a housing having an upper surface and a front panel provided with a cut-out; a drawer slidably movable into and out of said cut-out and provided with a receiver into which tape cassettes can be placed from above in flat position so as to have their major sides extend parallel to said upper surface; a tape capstan adapted for advancing movement of a tape in said cassette and mounted in said receiver; and a direct-driver motor coupled with said capstan for driving the same and positioned in said drawer.

4,259,703

MAGNETO RESISTIVE MAGNETIC TRANSDUCERS

Ian R. Young, Sunbury-on-Thames, and Ramesh Mistry, Greenford, both of England, assignors to EMI Limited, Hayes, England

Filed Jun. 8, 1979, Ser. No. 46,850
Claims priority, application United Kingdom, Jun. 20, 1978, 27338/78
Int. Cl.[3] G11B 5/12, 5/47
U.S. Cl. 360—113 8 Claims



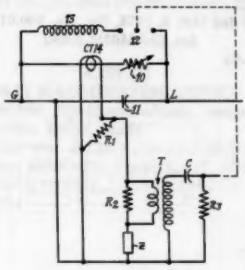
1. A magneto resistive transducer arrangement comprising, a magneto resistive element, means for biassing the element with a periodic, time swept magnetic field exhibiting positive and negative excursions of equal amplitude about a preset reference level of zero magnitude, means for applying an electrical input signal to said element, monitoring means for sensing an output signal from said element indicative of its electrical resistance and for detecting a minimum in the electrical resistance, and an output means for generating a signal for indicating whether or not a detected minimum in the electrical resistance occurs when the magnitude of the biassing field is uniquely equal to said preset, zero reference level.

4,259,704

PROTECTIVE CIRCUIT FOR ZINC OXIDE VARISTORS

John R. Hamann, Richmond, Mass., assignor to General Electric Company, N.Y.

Filed Apr. 20, 1979, Ser. No. 32,013
The portion of the term of this patent subsequent to Nov. 13, 1996, has been disclaimed.
Int. Cl.[3] H02H 7/16
U.S. Cl. 361—16 7 Claims



1. An improved protective circuit for zinc oxide varistors of the type employing a triggered gap and high voltage means to trigger the gap upon the occurrence of a surge current and current sensing means for determining the occurrence of the current surge and for energizing the high voltage means wherein the improvement comprises:

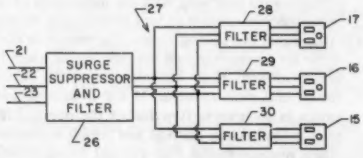
a pair of first and second resistors and a voltage dependent switch connected to said current sensor and to one side of the high voltage means for providing voltage to said high voltage means when a voltage generated across one of said linear resistors exceeds a predetermined turn-on voltage for the voltage dependent switch.

4,259,705

COMBINATION SURGE SUPPRESSOR FILTER

Francis J. Stifter, 171 S. Main St., Natick, Mass. 01760

Filed Mar. 27, 1979, Ser. No. 24,379
Int. Cl.[3] H02H 7/20
U.S. Cl. 361—56 8 Claims



1. An electronic isolation and surge suppression system comprising:

a housing defining a connector opening and a plurality of socket openings;

an electrical connector extending through said connector opening and comprising a plurality of electrical conductors, each having one end located externally of said housing and an opposite end located internally thereof; said externally located ends adapted for connection to a source of AC power;

a voltage surge suppressor means disposed within said housing and connected to said internal ends of said conductors;

a plurality of multiple terminal electrical socket means mounted in said socket openings and adapted to receive electrical plugs; and

electrical circuit means connecting said socket means in a

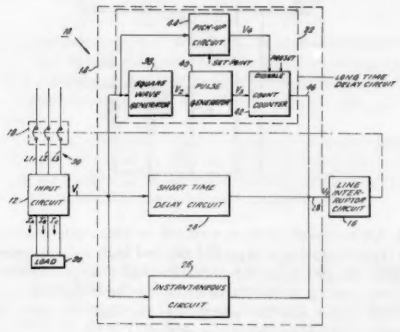
parallel combination and connecting said parallel combination in series with said suppressor means, said circuit means comprising a separate electrical filter means connected between each of said socket means and said suppressor means.

4,259,706

SOLID STATE RELAY

Stanley E. Zocholl, Holland, Pa., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Oct. 6, 1978, Ser. No. 949,015
Int. Cl.³ H02H *3/093*
U.S. Cl. 361—96 **16 Claims**



1. A solid state relay for interrupting current flow in a power distribution circuit, comprising:

(A) input circuit means for generating a peak line current signal representative of the peak instantaneous current in said power distribution circuit;

(B) long time delay circuit means responsive to said peak line current signal for generating a first trip signal whenever said peak instantaneous current in said power distribution circuit rises above a selected pick-up value I1 for a time period which varies inversely with the magnitude of said peak instantaneous current, said long time delay circuit means comprising:

(1) square wave generator means responsive to said peak line current signal for generating a square wave whose period varies inversely with the magnitude of said peak instantaneous current in said distribution circuit;

(2) trip signal generating means responsive to said square wave for generating said first trip signal when the magnitude of said peak instantaneous time current rises above said pick-up value I1 for a time period which varies as an inverse function of the magnitude of said peak instantaneous current and which is determined by a first predetermined time-current characteristic curve which defines the desired operating characteristic of said relay over a first current range extending between said selected pick-up current I1 and a higher current; said trip signal generating means comprising pulse generator means responsive to said square wave for generating a pulse train having a frequency which varies as a direct function of the magnitude of said peak instantaneous current in said distribution circuit; said pulse generator means generating a single pulse of predetermined height and duration once during each period of said square wave, and said trip signal generating means further comprising means responsive to said pulse train for generating said first trip signal; and

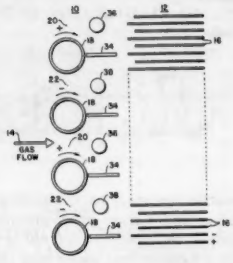
(C) circuit interrupter means for interrupting current flow in said power distribution circuit responsive to the generation of said first trip signal by said long time delay circuit means.

4,259,707

SYSTEM FOR CHARGING PARTICLES ENTRAINED IN A GAS STREAM

Gaylord W. Penney, 216 Paris Rd., Pittsburgh, Pa. 15235

Filed Jan. 12, 1979, Ser. No. 2,908
Int. Cl.³ H01T *19/00*; B03C *3/41*
U.S. Cl. 361—212 **16 Claims**



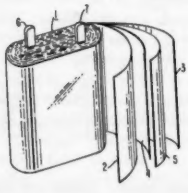
1. In a device for charging particles entrained in aerosol streams, the combination of passive electrodes between which said aerosol streams pass, means for alternately exposing said passive electrodes to positive and negative corona such that particles charged to one sign of corona can be stored on the surface of a passive electrode and subsequently be neutralized by the opposite polarity of corona, means including the passive electrodes for defining separate flow paths which direct separate streams of aerosol to be charged past said passive electrodes, and the positive and negative corona being separated such that any given aerosol stream is exposed to only one sign of corona to charge said particles.

4,259,708

CAPACITOR WITH ESTER DIELECTRIC FLUID

Lyon Mandelcorn, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 19, 1978, Ser. No. 970,884
Int. Cl.³ H01B *3/22*
U.S. Cl. 361—318 **13 Claims**



1. A capacitor comprising a multiplicity of alternating layers of plastic film and metal foil impregnated with a dielectric fluid which comprises an ester of a benzene tri- of tetra- carboxylic acid, where said ester group has the general formula

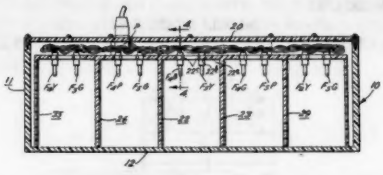
$$-\underset{\underset{O}{\|}}{C}-O-CH_2-CH_2-C_nH_{2n+1}$$

where n is an integer from 7 to 10.

4,259,709
DECORATIVE LIGHTING ASSEMBLY

Jack L. Eddings, 2135 Walnut St., Apt. 5-A, Philadelphia, Pa. 19103

Filed May 8, 1978, Ser. No. 903,183
Int. Cl.³ F21V 7/00
U.S. Cl. 362—231 8 Claims

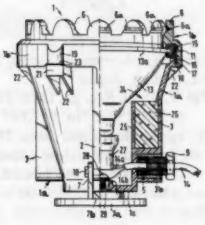


1. A decorative lighting assembly comprising:
a frame having a rear panel and a translucent front panel spaced therefrom,
a plurality of lamp reflectors mounted in said frame in close proximity with one another, each reflector being elongated and extending between said panels for a sufficient distance as to project a discrete area of light on said front panel,
a series of lamps of various hues mounted in each lamp reflector adjacent said rear panel so that light from the lamps reflects in the reflector and mixes before being projected on said front panel,
a series of lamp flashers corresponding in number to the number of lamps in each reflector, and
circuit means in said frame connecting a separate flasher to one lamp in each series and connecting said one lamp in each series with one lamp in each of the other series,
whereby the reflectors are randomly illuminated with mixed colors to produce a decorative lighting effect on the front panel of the frame.

4,259,710
WATERPROOF LAMP

Karl-Friedrich Schlack, Hohler Weg 24, D 493 Detmold 14, Fed. Rep. of Germany

Filed Mar. 13, 1979, Ser. No. 20,201
Claims priority, application Fed. Rep. of Germany, May 26, 1978, 7815805
Int. Cl.³ F71V 21/02
U.S. Cl. 362—267 10 Claims

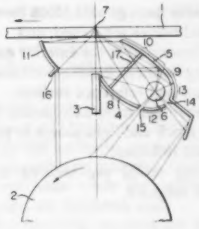


1. A waterproof lamp, comprising:
a bell-shaped housing member having external reinforcing ribs, and at least one integral extension containing an electrical feedthrough connection and a weighting medium;
at least one electrical light source positioned in said housing;
sealing means positioned adjacent said light source;
a bezel, capable of releasably holding a color filter disc, and means thereon for clamping said bezel to said housing, said bezel being a bezel ring having a circumferential groove for holding said sealing means, said sealing means having a C-shaped cross section and said at least one electrical light source having a frontal edge which is held within said groove defined by said C-shaped cross section of said sealing means and wherein said housing member has a shoulder against which said bezel ring is clamped; thereby clamping said bezel ring to said housing member compresses said sealing means and holds in place said at least one electrical light source;
a pedestal attached to said housing member; and
said housing memer, said bezel ring and said pedestal are individually integral units constructed of a synthetic material.

4,259,711
SLIT ILLUMINATING DEVICE

Noritaka Mochizuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1979, Ser. No. 25,081
Claims priority, application Japan, Apr. 7, 1978, 53/41026
Int. Cl.³ F21V 7/00; G03B 27/54
U.S. Cl. 362—304 8 Claims



1. A slit illuminating device comprising:
a tubular light source;
a first reflector means of a conicoidal surface having the generation lines parallel to the center of said light source, said reflector means being provided so as to partially encircle said light source and to directly illuminate a slit area for illuminating an original to be copied, said first reflector means being disposed below a principal axis connecting the light source and the slit area;
a second reflector means shaped in such a manner that a part of the reflecting surface thereof directly illuminates the slit area in the same manner as the first reflector means and that the remaining part of the reflecting surface directs the reflected light substantially parallel to the plane of the original, said second reflector means being disposed above the principal axis connecting said light source and the slit area; and
a third reflector means positioned on the side of the slit area opposite to that of said first and second reflector means and adapted to reflect the light from said second reflector means toward said slit area so as to illuminate said area from a direction symmetrical to that of the direct illumination by said first and second reflectors as measured from a line passing through said slit area normal to the plane of the original.

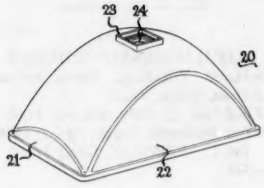
4,259,712
SEALED, PREFOCUSED MOUNT FOR PLASTIC PAR LAMP

Vincent Vodicka, South Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,490
Int. Cl.³ F21V 7/00; H01R 4/70
U.S. Cl. 362—310 13 Claims

1. A sealed reflector lamp comprising:
a plastic reflector;

a lens sealed to said reflector;
at least two electrical connecting means;
a plastic block of predetermined shape and having an upper reference surface, enclosing and securing in fixed relation within said block portions of said connecting means, comprising mating halves, each half defining at least two pairs of channels, each pair interconnected by a cavity, for receiving portions of said connecting means;
an elastomeric polymer in the cavities of said block for



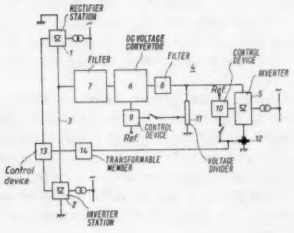
sealing the paths through said block formed by said channels when said halves are joined; and
a light source connected to the exterior ends of said electrical connecting means in specified relation with said predetermined shape and reference surface;
said reflector having a receptacle means for receiving and locating said block and light source in predefined relation relative to said reflector;
said mount being sealed and secured to said receptacle means of said reflector.

4,259,713

HIGH VOLTAGE DIRECT CURRENT TRANSMISSION

Gunnar Flisberg, and Lars-Erik Juhlin, both of Ludvika, Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

Filed Feb. 21, 1979, Ser. No. 14,011
Claims priority, application Sweden, Feb. 21, 1978, 7801966
Int. Cl.³ H02J *3/36*
U.S. Cl. 363—35 **8 Claims**



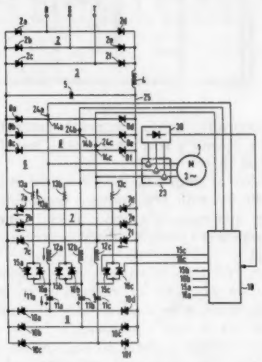
1. Improved transmission apparatus for high-voltage direct current of a type wherein at least one rectifier station and one inverter station are connected on a DC line having a particular line voltage and a discharge station is used to discharge power from the DC line, the improvement comprising:
inverter means for said discharge station connected to said DC line through a DC voltage convertor means, said inverter means having means for operating at a direct voltage that is substantially less than said particular line voltage.

4,259,714

FREQUENCY CONVERTER WITH AN INTERMEDIATE D-C LINK

Hans-Hermann Zander, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 12, 1979, Ser. No. 57,021
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1978, 2831752
Int. Cl.³ H02M *5/45*
U.S. Cl. 363—37 **9 Claims**



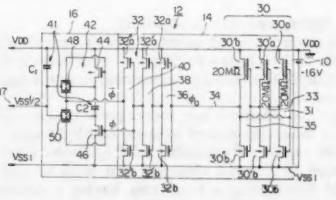
1. In a static frequency converter comprising an intermediate DC voltage link, a rectifier, and an inverter having main thyristors in a bridge circuit which are shunted by antiparallel bypass diodes in a bridge circuit, in which each bridge arm is shunted by a quenching circuit comprising a quenching thyristor, a commutating capacitor, and a commutating choke, there being a common commutating capacitor provided for each two bridge arms having a common main terminal, and in which a device for limiting the current-dependent recharging is employed, the improvement comprising:
means for connecting an energy-removing device to each commutating choke to limit the current-dependent recharging after the occurrence of the potential change at the corresponding output termial of the inverter at the end of every commutaton.

4,259,715

VOLTAGE CONVERSION SYSTEM FOR ELECTRONIC TIMEPIECE

Shigeru Morokawa, Higashiyamato, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Division of Ser. No. 726,013, Sep. 22, 1976. This application Jun. 5, 1978, Ser. No. 912,267
Claims priority, application Japan, Sep. 27, 1975, 50-116620
The portion of the term of this patent subsequent to Jun. 13, 1995, has been disclaimed.
Int. Cl.³ H02M *7/00*
U.S. Cl. 363—60 **28 Claims**



1. A voltage convertion system coupled to a power source

having high and low potentials, to provide a lower output voltage than that of the power source, comprising:

a plurality of capacitors; and

a plurality of different types of fieled effect transistors for switching connections of said plurality of capacitors relative to the power source for thereby providing said lower output voltage, one type of said plurality of field effect transistors having a source electrode connected to the high potential of said power source, and another type of said plurality of field effect transistors having a source electrode connected to the low potential of said power source.

4,259,716

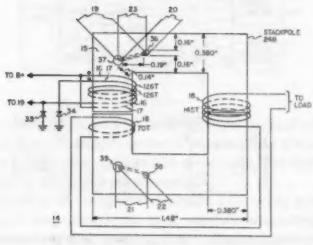
TRANSFORMER FOR USE IN A STATIC INVERTER

James E. Harris, Liverpool; Robert J. McFadyen, Syracuse; William Peil, N. Syracuse, and Nicholas A. Schmitz, Liverpool, all of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Continuation-in-part of Ser. No. 875,337, Feb. 6, 1978, abandoned. This application Apr. 9, 1979, Ser. No. 28,405

Int. Cl.³ H01F *31/00;* **H02M** *1/08*

U.S. Cl. 363—97 **18 Claims**



1. A transformer having

(1) a core of substantially linear magnetic material for main flux pursuing a closed magnetic path, a pair of apertures in a localized region of the core, a first aperture being arranged before a second aperture along said magnetic path, said first aperture dividing the magnetic path into a first and a second branch, and said second aperture dividing the magnetic path into a third and fourth branch, with a fifth branch being formed between said apertures, the first and fourth branches forming a first diagonal pair of branches and the second and third branches forming a second diagonal pair of branches,

(2) a primary winding encircling said magnetic core for generating a main flux in said closed magnetic path when a voltage is applied thereto,

(3) a first control winding, serially coupled with said primary winding, encircling said fifth branch for generating a circulating flux forming two counter-rotating loops, one around each aperture, when current is supplied thereto, the fluxes in said two loops combining additively in said fifth branch, the flux in one of the loops combining with said main flux additively in each of said first diagonal pair of branches, and substractively in each of said second diagonal pair of branches, predisposing a branch in said first diagonal pair of saturate first as energization increases, and

(4) a second control winding encircling said fifth branch for deriving an electrical quantity whose sign reverses as a function of the magnetic state of said core.

4,259,717

INFORMATION PROCESSOR

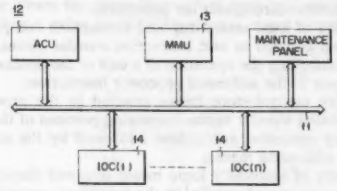
Norimitsu Nakamura, Oume, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 6, 1978, Ser. No. 940,129

Claims priority, application Japan, Sep. 6, 1977, 52/107032

Int. Cl.³ G06F *9/46*

U.S. Cl. 364—200 **20 Claims**



1. A microprogram controlled information processor having at least two units which compete for possession of a common bus by generating interrupt requests, at least one of said units comprising:

timing generating means for generating outputs comprising timing signals for controlling the execution of the microprogram;

means for selectively generating an inhibit signal for inhibiting said outputs of said timing generating means when said at least one unit has exclusive possession of the bus;

first means for receiving an interrupt request generated by the other of said units while the outputs of said timing generating means are inhibited; and

second means for receiving an interrupt request generated by the other of said units while the outputs of said timing generating means are not inhibited.

4,259,718

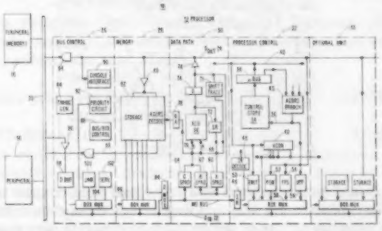
PROCESSOR FOR A DATA PROCESSING SYSTEM

Charles H. Kaman, Newton Highlands; Daniel T. Sullivan, Bolton; James F. O'Loughlin, Westford, and Craig Mudge, Lincoln, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 10, 1977, Ser. No. 776,331

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **17 Claims**



1. A data processing system including a processor for fetching, interpreting and executing program instructions, said processor having a plurality of units, said processor comprising:

at least one processor data bus comprised of at least one electrical conductor for transferring information between said units of the processor;

control store means for storing a plurality of processor instructions used for controlling the transfer and manipulation of information by the processor and including second processor instructions used to control the transfer of

information between the units of the processor over the processor data bus, said control store means having an output and said processor instructions including at least one control field;

control store addressing means for periodically addressing certain ones of the processor instructions for causing the addressed processor instruction to be coupled to the output of said control store means;

instruction transfer means coupled to the output of the control store means for transferring the addressed processor instructions throughout the processor;

a plurality of logic means disposed throughout said processor and coupled to said instruction transfer means, each for controlling the operation of a unit of the processor in response to the addressed processor instruction;

secondary control store means coupled to the processor instruction transfer means for storing portions of the secondary processor instructions addressed by the control store addressing means;

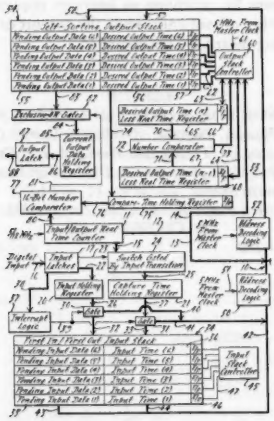
a plurality of secondary logic means disposed throughout the processor and coupled to the secondary control store means for coupling certain units of the processor to said processor data bus in accordance with the contents of the secondary control store means.

4,259,719

BINARY INPUT PROCESSING IN A COMPUTER USING A STACK

Brian S. Edelman, Dearborn, and Ralph L. Robinson, Jr., Canton Township, Wayne County, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 13, 1979, Ser. No. 48,201
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 **12 Claims**



1. In a digital computer that has a real time counter and a memory/address bus and that uses binary input data comprising a plurality of bits of information to generate output information in response to a program operating on the binary input data, improved processing of the binary input data comprising the steps of:

(a) upon a transition from one state to another of any of the bits of binary input data, storing in an input holding register a byte of binary input data containing the bit which has undergone transition;

(b) storing in a capture-time holding register a byte indicative of the count of the real time counter as of the time of the transition;

(c) transferring contents of the input holding register to a stack as a pending input data byte and transferring contents of the capture-time holding register to the stack as an input time byte indicative of a real time at which an input data transition occurred; and

(d) repeating the above sequence of steps upon a subsequent transition from one state to another of any of the bits of binary input data without, as a result of such repetition of steps, preventing the pending input data byte placed in the stack prior to the subsequent transition from being utilized by the digital computer with the aid of the memory/address bus;

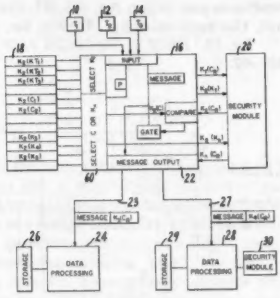
whereby, the digital computer may operate on one or more pending input data bytes, and the individual bits therein, without loss of changed binary input data and without disregard of simultaneous data transitions.

4,259,720

SECURITY SYSTEM FOR ELECTRONIC FUNDS TRANSFER SYSTEM

Carl M. Campbell, Newtown Square, Pa., assignor to Interbank Card Association, New York, N.Y.

Filed Jan. 9, 1978, Ser. No. 867,924
Int. Cl.³ H04L *9/00*; G06F *15/30*
U.S. Cl. 364—200 **5 Claims**



1. In a system, including at least two data processing units, for automatically performing banking functions in response to transaction requests, originated at a banking terminal by a banking customer, said banking terminal associated with a first one of said data processing units, apparatus for verifying the identity of said customer comprising:

means, at said terminal operated by said customer, for receiving a scret customer code and for encrypting said code to form an encrypted message portion;

means at said terminal for receiving transaction information and for forming a transaction message portion;

means for transmitting said encrypted message portion and said transaction message portion from said terminal to said first data processing unit;

means at said first data processing unit for interpreting said transaction message portion and for providing a first control signal if said customer has an account maintained by said data processing unit and for providing a second control signal if said customer has an account maintained by a second data processing unit in said system;

a memory associated with said first data processing unit for storing encrypted customer codes, and including means for selecting an encrypted customer code from said memory in response to said first control signal in accordance with said transaction message portion;

and decrypting means connected to said first data processing unit and receiving said encrypted message portion and said selected customer code from said first data processing unit, and responsive to said first control signals for decrypting said encrypted message portion, and including means for comparing said decrypted message portion to said selected customer code, and

said decrypting means further including means, responsive to said second control signals, for decrypting said encrypted message portion and re-encrypting said encrypted message portion for transmission with said transaction message portion to said data processing unit.

4,259,721

COMPUTER SYSTEM FOR THE IMAGE SYNTHESIS OF A TRANSVERSE BODY SECTION AND METHOD FOR THE OPERATION OF THE COMPUTER SYSTEM

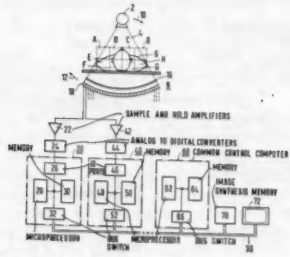
Christian Kuznia, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 876,333, Feb. 9, 1978, abandoned. This application Apr. 11, 1978, Ser. No. 895,395

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1977, 2705640

Int. Cl.[2] **G01N** *23/00*

U.S. Cl. 364—414 **9 Claims**



1. A computer system for the image synthesis of a transverse body section with image elements successively transmitted by rays in an image plane in various directions, the rays detected by a plurality of detectors, comprising:

(a) a plurality of computer modules, one being provided for each of said detectors, each module including a microprocessor, and associated therewith an input-output port for receiving information from a respective detector, a data memory, and a bus switch;

(b) a common control computer having associated therewith a program memory and an image synthesis memory, said common control computer programmed to control each of said plurality of microprocessors; and

(c) means interconnecting each of said microprocessors to said common control computer through their respective bus switches.

4,259,722

ELECTRIC CONTROL METHOD AND APPARATUS FOR AUTOMOBILE AIR CONDITIONER

Yasuhiro Iwata, Aichi; Kiyoshu Usami, Obu; Masanori Naganoma, Kariya; Teiichi Nabeta, Okazaki, and Yasuhumi Kojima, Gifu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 5, 1979, Ser. No. 82,425

Claims priority, application Japan, Oct. 11, 1978, 53-125431

Int. Cl.[3] **G06F** *15/20;* **B60H** *3/00*

U.S. Cl. 364—424 **5 Claims**

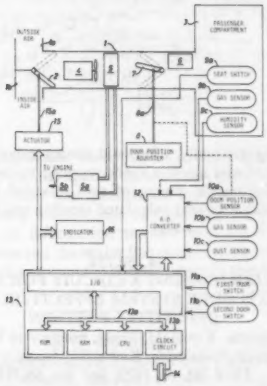
1. An electric control apparatus for an automobile air conditioner including an air duct provided with a first inlet for inducting outside air from the exterior into a passenger compartment through said air duct and with a second inlet for recirculating inside air from the passenger compartment into said air duct, a switch door arranged within said air duct for conducting the induction of outside air in its first position and the recirculation of inside air in its second position, and an actuator arranged to switch over said switch door from the first position to the second position in its first operative condition and to switch over said switch door to the first position from the second position in its second operative condition,

said control apparatus comprising:

first means for detecting undesired outside air conditions and producing a first electric signal indicative of the undesired outside air conditions;

second means for detecting undesired inside air conditions and producing a second electric signal indicative of the undesired inside air conditions; and

third means for generating a first output signal therefrom when a value of said first electric signal exceeds a first



predetermined value such that said actuator is rendered in response to said first output signal in the first operative condition and for generating a second output signal therefrom with lapse of a predetermined period of time after the value of said first electric signal becomes below the first predetermined value such that said actuator is rendered in response to said second output signal in the second operative condition and for conducting the generation of said second output signal when a value of said second electric signal exceeds a second predetermined value during the predetermined period of time.

4,259,723

METHOD FOR CONTROLLING OPERATIONS OF A COMBUSTION ENGINE

Hideya Fujisawa; Norio Omori; Hisamitsu Yamazoe, all of Kariya, and Matuju Yoshida, Bisai, all of Japan, assignors to Nippondenso Co., Ltd., Japan

Filed Feb. 26, 1979, Ser. No. 15,443

Claims priority, application Japan, May 4, 1978, 53-53595

Int. Cl.[3] **F02P** *5/06;* **F02M** *3/04*

U.S. Cl. 364—431 **4 Claims**

1. A method for automatically controlling operations of a combustion engine with electronic circuitry, said engine having an output shaft rotated by the combustion of fuel mixed with air and ignited by an ignition spark, the amount of said fuel and the timing of said ignition spark being calculated repeatedly according to operating conditions of said combustion engine while said output shaft is in rotation, said method comprising the steps of:

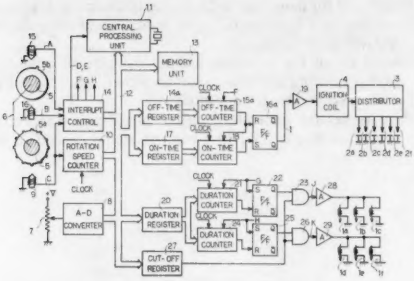
discriminating whether a decelerating condition of said combustion engine is present or absent;

cutting off the supply of said calculated fuel in response to a first discrimination result indicative of a presence of said decelerating condition;

resuming the supply of said calculated fuel in response to a second discrimination result indicative of an absence of said decelerating condition;

retarding, after a transition from said first to second discrimination results, the timing of said ignition spark supplied to

said combustion engine to be later than that of said calculated ignition spark; and



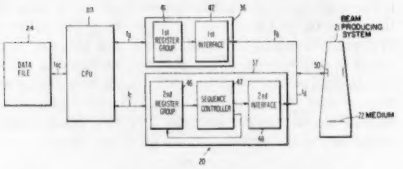
advancing gradually, after said timing retarding step, the timing of said ignition spark supplied to said combustion engine from the timing of said retarded ignition spark toward that of said calculated ignition spark.

4,259,724

DEVICE COMPRISING A CIRCUIT FOR MAKING A BEAM EXPOSURE SYSTEM EFFECTIVELY DRAW A REPETITIVE PATTERN

Naoshi Sugiyama, Kawasaki, Japan, assignor to VLSI Technology Research Association, Kawasaki, Japan

Filed Jul. 10, 1979, Ser. No. 56,382
Claims priority, application Japan, Jul. 10, 1978, 53-82887
Int. Cl.[3] G06F *15/46;* A61K *27/02*
U.S. Cl. 364—491 **1 Claim**



1. A device for use in combination with a system responsive to a beam control signal representative of a selected one of repetitive and nonrepetitive patterns for producing a controlled beam of particles to draw said pattern on a medium sensitive to said beam, each of said repetitive patterns comprising an elementary pattern repeatedly arranged according to a law of repetition, said nonrepetitive patterns being different from said repetitive patterns, said device comprising:

first memory means for memorizing data sets of a first kind representing said nonrepetitive patterns, respectively;

first reading means coupled to said first memory means for reading one of the data sets of said first kind that represents the selected nonrepetitive pattern, said first reading means thereby producing, as said beam control signal, a first sequence of data signals representative of the read-out data set of said first kind;

second memory means for memorizing data sets of a second kind representing the elementary patterns of said repetitive patterns, respectively, and data sets of a third kind corresponding to the respective data sets of said second kind and representing the respective laws of repetition; and

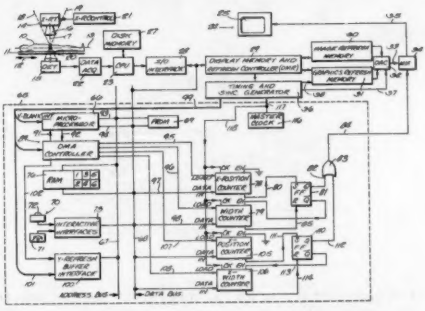
second reading means coupled to said second memory means for reading one of the data sets of said second kind and the corresponding data set of said third kind, the read-out data set of said second kind representing the elementary pattern that the selected repetitive pattern comprises, the read-out data set of said third kind representing that law of repetition according to which the elementary pattern represented by the read-out data set of said second kind is repeatedly arranged, said second reading means thereby producing, as said beam control signal, a second sequence of data signals representative of the read-out data set of said second kind repeatedly arranged according to the law of repetition represented by the read-out data set of said third kind.

4,259,725

CURSOR GENERATOR FOR USE IN COMPUTERIZED TOMOGRAPHY AND OTHER IMAGE DISPLAY SYSTEMS

Edward W. Andrews, Milwaukee; James E. Blake, New Berlin, and Thomas W. Lambert, Dousman, all of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 1, 1979, Ser. No. 16,665
Int. Cl.[3] G06F *3/14;* G01N *21/00*
U.S. Cl. 364—521 **14 Claims**



1. In a system including a video monitor having a display screen and a raster scanned image forming beam scanning the screen along a plurality of horizontal lines, said monitor having input means for video signals that are operative to control said beam to effect display of an image on said screen,

means for superimposing one or more cursors on said display screen, comprising:

processor means,

a readable memory coupled to said processor means for storing one or more programs usable by said processor means to generate parameters representative of the horizontal location and width of a segment in each horizontal raster scan line that contributes to defining the shape of the cursor to be displayed on said screen,

random access memory means having an X-Y memory matrix for storing said horizontal location and width parameters for segments in the respective horizontal scan lines so that a sequence of said lines is capable of defining the cursor,

operator interactive control means operatively coupled with said processor means and including a manually movable control member movable in X and Y directions, said control means responding to movements of said member by providing corresponding signals to said processor means, said processor means responding to said signals by generating parameters corresponding with a new position of the cursor on the display screen,

means for causing said RAM to output said location and width parameters for segments in synchronism with the horizontal raster lines to which they respectively relate and means responding to said outputted location and width parameters by producing a signal for changing the intensity of said beam when it has scanned to the segment locating and for again changing the intensity of said beam when it has scanned the width of the segment, and

mixer means having output means coupled to said input

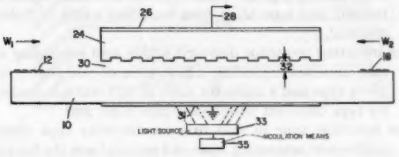
means of said video monitor and having first input means for said image video signals and second input means for said beam intensity changing signals.

4,259,726

DIODE ARRAY CONVOLVER

Robert Joly, Palo Alto, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 3, 1978, Ser. No. 957,763
Int. Cl.³ G06G 7/195; H01L 41/08
U.S. Cl. 364—821 **5 Claims**



1. A signal convolving device comprising:
(a) a body adapted for propagating acoustic waves and having a first end, a second end, an upper surface and a lower surface;
(b) first means for propagating a first acoustic wave adjacent said first end of said body toward said second end;
(c) second means for propagating a second acoustic wave adjacent said second end of said body toward said first end;
(d) means for convolving the electric field signal occurring from the interaction of said first acoustic wave and said second acoustic wave in said body, said convolving means having sensitivity to light and extending substantially between said first propagating means and said second propagating means, said convolving means outputting a signal;
(e) an alternating narrow rail structure extending the length of said body, said narrow rail structure interposed between said body and said convolving means, said narrow rail structure supporting said convolving means and providing an air gap between said body and said convolving means;
(f) means for conducting said signal from said convolving means; and
(g) light source for modulating said output signal of said convolving means, said light source being disposed below said lower surface of said body and directing radiant energy through said body and into said convolving means.

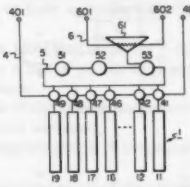
4,259,727

MAGNETIC BUBBLE MEMORY DEVICE

Shobu Orihara; Seiichi Iwasa, and Ryoichi Kinoshita, all of Kawasaki, Japan, assignors to Fujitsu Limited, Tokyo, Japan

Filed Jun. 26, 1979, Ser. No. 52,317
Claims priority, application Japan, Jun. 30, 1978, 53-79889; Aug. 14, 1978, 53-98762
Int. Cl.³ G11C 19/08
U.S. Cl. 365—16 **9 Claims**

1. A magnetic bubble memory device comprising
a plurality of minor loops for storing information
at least one major line for selectively writing information into and reading information from said plurality of minor loops,
said plurality of minor loops comprising regular minor loops, spare minor loops to store the information intended for any defective one of said regular minor loops, and at least one special minor loop for storing address information regarding the spare minor loops corresponding to the defective regular minor loops,
a plurality of bubble gates between said minor loops and said major line, and,
the structure of said bubble gates between said special minor loops and the major line being different from that between the ordinary minor loops and the major line to selectively transfer the information between said special minor loops and the major line and between the ordinary minor loops



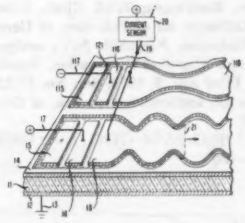
and the major line, such that no information transfer occurs between the special minor loops and the major line during the time that information transfer occurs between the ordinary minor loops and the major loop and conversely, no information transfer between the ordinary minor loops and the major line occurs when information is transferred between the special minor loops and the major line.

4,259,728

FERROELECTRIC ANALOG DEVICE

John M. Geary, Summit, and Hans G. Mattes, Ocean Township, Monmouth County, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 5, 1979, Ser. No. 27,612
Int. Cl.³ G11C 27/00, 11/22
U.S. Cl. 365—45 **5 Claims**



1. Device comprising a film which is ferroelectric, a first electrode on at least a portion of a first side of said film, a second electrode on at least a portion of a second side of said film and at least in part facing said first electrode characterized in that (1) at least said first electrode is patterned so as to have width which varies in correspondence to an analog signal and (2) a current sensor is electrically connected to at least one of said first electrode and said second electrode, whereby, upon movement of a ferroelectric domain wall in said film past said patterned electrode, a current signal is sensed whose strength is in correspondence to said signal.

4,259,729

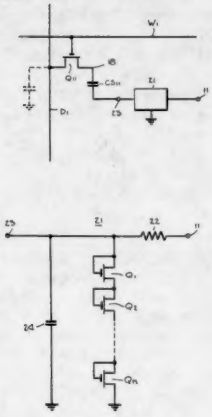
DYNAMIC MEMORY

Kazuo Tokushige, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1979, Ser. No. 31,981
Claims priority, application Japan, Apr. 24, 1978, 53-48544
Int. Cl.³ G11C 11/24
U.S. Cl. 365—149 **11 Claims**

1. A memory comprising a plurality of word lines, a plurality of bit lines, a plurality of memory cells, each of said memory

cells including an insulated-gate field-effect transistor having a gate coupled to one of said word lines, a source and a drain, said drain being coupled to one of said bit lines, and a capacitor having a first electrode coupled to said source of said transistor and a second electrode, means for receiving a power supply



voltage, means for stabilizing said power supply voltage to produce a stabilized voltage substantially free from variation in said power supply voltage, and means for supplying in common the second electrodes of said capacitors in said memory cells with said stabilized voltage.

4,259,730

IIL WITH PARTIALLY SPACED COLLARS

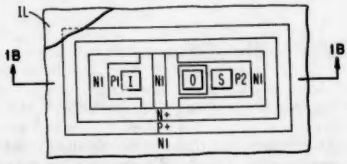
Klaus Heuber, Boeblingen; Erich Klink, Schoenaich; Volker Rudolph, Aidlingen, all of Fed. Rep. of Germany, and Siegfried K. Wiedmann, Peekskill, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 5, 1979, Ser. No. 27,223

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2816949

Int. Cl.[3] **H01L** *27/04;* **G11C** *11/40;* **H03K** *19/091*

U.S. Cl. 365—156 **10 Claims**



1. A monolithically integrated semiconductor structure comprising:

a semiconductor substrate of a first conductivity type,

a semiconductor layer of a second conductivity type disposed on said semiconductor substrate,

a separating zone defining a portion of said semiconductor layer having a given width between first and second sides thereof, said separating zone including a ring of heavily doped semiconductor material of said second conductivity type,

an inverting transistor disposed within said separating zone, said transistor including a base zone of said first conductivity type and a collector zone of said second conductivity type disposed within said base zone, and

an injection zone of said first conductivity type disposed within said separating zone and spaced from the base zone of said transistor by a given distance,

the edge of said base zone and the edge of said injection zone facing each other extending from said first side to said second side, substantially the remaining edges of said base zone and of said injection zone being spaced from said separating zone by a predetermined distance.

10. A monolithically integrated semiconductor structure comprising:

a semiconductor substrate of a first conductivity type,

a semiconductor layer of a second conductivity type disposed on said semiconductor substrate,

a separating zone defining a portion of said semiconductor layer having a given width between first and second sides thereof, said separating zone including a ring of dielectric material,

an inverting transistor disposed within said separating zone, said transistor including a base zone of said first conductivity type and a collector zone of said second conductivity type disposed within said base zone, and

an injection zone of said first conductivity type disposed within said separating zone and spaced from the base zone of said transistor by a given distance,

the edge of said base zone and the edge of said injection zone facing each other extending from said first side to said second side, substantially the remaining edges of said base zone and of said injection zone being spaced from said separating zone by a predetermined distance.

4,259,731

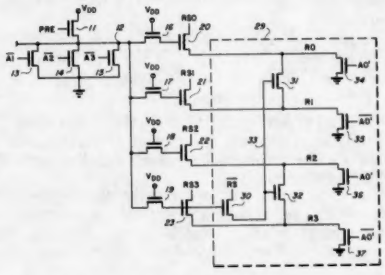
QUIET ROW SELECTION CIRCUITRY

Jerry D. Moench, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 14, 1979, Ser. No. 94,004

Int. Cl.[3] **G11C** *8/00, 7/02*

U.S. Cl. 365—206 **10 Claims**

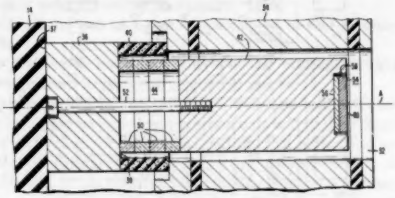


1. A quiet row select circuit for use in a memory array having a decoder and a plurality of row select lines, the decoder providing an output, comprising: a first transistor coupled from each of the plurality of row select lines to a reference potential, each of the first transistors having a control electrode wherein adjacent first transistors have complementary address signals coupled to their control electrodes; a plurality of second transistors each coupled between two of the row select lines in a manner so that one of the plurality of second transistors is coupled between a first and a second row select line of the plurality of row select lines and another of the plurality of second transistors is coupled between a third and a fourth row select line of the plurality of row select lines and so forth with the remainder of the plurality of second transistors; and control means to controllably enable the plurality of second transistors, the control means enabling the second transistors when the associated row select lines are not selected thereby holding the row select lines in a quiet state, the control means being coupled to the output of the decoder.

4,259,732
TRANSDUCER ASSEMBLY FOR SELF-CALIBRATION

Phillip R. Anderson, Columbia; George R. Douglas, Arnold, and John H. Thompson, Severna Park, all of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 4, 1979, Ser. No. 45,452
Int. Cl.³ H04R 29/00
U.S. Cl. 367—13 10 Claims

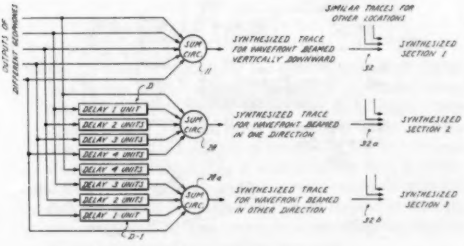


1. A transducer assembly for self-calibration comprising:
(a) a head mass for projection and/or reception of acoustic energy;
(b) a tail mass operative as an inertial element;
(c) first active transducer means interposed between and coupled to said head and tail masses;
(d) auxiliary active transducer means coupled to said tail mass and having a natural resonant frequency different from that of said coupled head mass, tail mass and first active transducer means;
(e) said auxiliary transducer means being positioned so that when either one of said active transducer means is selectively supplied with an energizing signal, it will cause relative movement of said tail mass and a corresponding output signal from the other of said active transducer means;
(f) means for electrically connecting said first active transducer means to transmit/receive signal processing circuitry; and
(g) means for electrically connecting said auxiliary active transducer means to transducer testing circuitry.

4,259,733
MULTI-DIMENSIONAL SEISMIC IMAGING

M. Turhan Taner; Robert E. Sheriff, both of Houston, Tex., and Fulton Koehler, Minneapolis, Minn., assignors to Seiscom Delta, Inc., Houston, Tex.

Filed May 14, 1979, Ser. No. 38,818
Int. Cl.³ G01V 1/28
U.S. Cl. 367—61 6 Claims

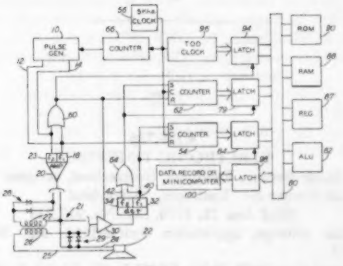

SIMILAR TRACES FOR OTHER LOCATIONS
SYNTHESIZED TRACE FOR WAVEFRONT BEAMED VERTICALLY DOWNWARD
SYNTHESIZED SECTION 1
SYNTHESIZED TRACE FOR WAVEFRONT BEAMED IN ONE DIRECTION
SYNTHESIZED SECTION 2
SYNTHESIZED TRACE FOR WAVEFRONT BEAMED IN OTHER DIRECTION
SYNTHESIZED SECTION 3
DELAY 1 UNIT
DELAY 2 UNITS
DELAY 3 UNITS
DELAY 4 UNITS
SUM CIRC.

1. A method of obtaining, from data acquired by transmitting seismic waves into subsurface formations and receiving reflected seismic signals from the formations with a line of geophones distributed uniformly over a distance greater than a first Fresnel zone for the seismic waves, multi-dimensional imaged seismic data, comprising the steps of:
(a) summing the signals received at each geophone along the line to form a synthesized trace;
(b) delaying in time the reflected singals for each geophone according to the position of the geophone along the line to wavefront steer the reflected signals;
(c) summing the wavefront steered signal for each geophone along the line to form a synthesized trace for a beamed wavefront;
(d) repeating the foregoing steps for a series of shotpoint locations along a line of profile to generate a plurality of synthesized traces;
(e) collecting sets of the synthesized traces to form a plurality of synthesized sections;
(f) individually migrating each of the plurality of synthesized sections; and
(g) summing the data contents of the plurality of synthesized sections to form a migrated two-dimensional seismic section.

4,259,734
FINE-RESOLUTION, WATER-DEPTH MEASURING SYSTEM

Norman A. Harmel, Winston-Salem, N.C., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 21, 1979, Ser. No. 106,226
Int. Cl.³ G01S 15/08
U.S. Cl. 367—101 13 Claims



1. A fine-resolution water-depth measuring system comprising:
means for transmitting from a vessel through water pulses of energy at a first frequency at intervals having a first period;
means for measuring the time required for transit of each first-frequency pulse to the bottom and the return to the vessel of its echo, wherein the first period is greater than the combined transit time of each transmitted pulse to the bottom and the return of its echo;
means for transmitting at least one pulse of energy at a second frequency during the time interval between two successive pulses at the first frequency;
means for receiving from the bottom echoes of each energy pulse;
means for sorting by frequency said received echoes; and
means for measuring at least a portion of the time required from transmission of each energy pulse at the second frequency to receipt of its echo.

4,259,735
TIMEPIECE MOVEMENT WITH DIFFERENTIAL GEAR MECHANISM

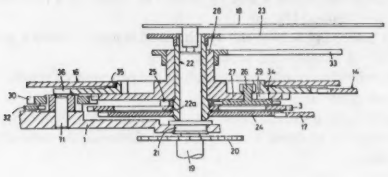
Pierre-Alain Vuille, Grenchen, Switzerland, assignor to ETA A.G. Ebauches-Fabrik, Grenchen, Switzerland

Filed Aug. 27, 1979, Ser. No. 70,054

Claims priority, application Switzerland, Sep. 4, 1978, 9264/78

Int. Cl.³ G04B *19/24*

U.S. Cl. 368—34 **6 Claims**



1. A timepiece movement having hands and comprising a differential gear mechanism controlling the position of an hour-hand and means for controlling said mechanism, said mechanism in turn comprising a planetary carrier, planet gear means having two coaxial sets of teeth, a sun gear, and a ring gear, said planet gear means engaging said ring gear and said sun gear, wherein said planetary carrier is designed as an hour-wheel, said sun gear is designed as a cannon-pinion having a toothing, and said ring gear is an annulus having internal teeth encircling the path of said planet gear means and connected to said means for controlling said mechanism.

4,259,736
ELECTRONIC TIMEPIECE

Jean-Claude Berney, Epalinges, Switzerland, assignor to Jean-Claude Berney SA, Epalinges, Switzerland

Filed Jun. 21, 1978, Ser. No. 917,535

Claims priority, application Switzerland, Jul. 18, 1977, 8851/77

Int. Cl.³ G04B *23/02*; G04C *21/00, 23/00, 21/16*

U.S. Cl. 368—62 **11 Claims**

1. An electronic timepiece comprising:

a power source;

means for producing time base pulses of a first frequency;

time display hands including a seconds hand;

means connected to said power source for driving said time display hands in response to said time pulses for indicating the actual time;

means responsive to said time base pulses for producing an actual time data signal;

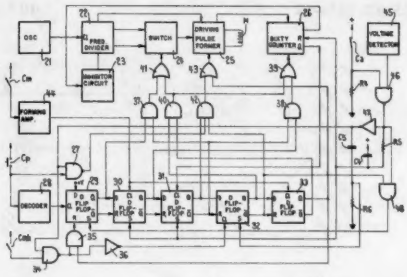
manually actuatable means for producing a data signal;

means for performing an auxiliary function in response to said data signal;

means for storing said data signal;

means for producing on and off control signals; and

control means having means responsive to said on control signal for coupling said stored data signal with said driving means for causing said driving means to drive said seconds hand to an indicating position corresponding to said stored data signal, said control means further having means responsive to said off control signal for uncoupling said stored data signal and for applying pulses to said



means until said time display hands indicate the actual time.

4,259,737
ELECTRONIC WATCH

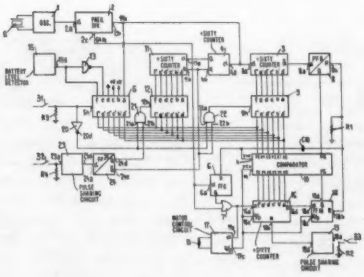
Jean-Claude Berney, Epalinges, Switzerland, assignor to Jean-Claude Berney SA, Epalinges, Switzerland

Filed Jul. 11, 1979, Ser. No. 56,799

Claims priority, application Switzerland, Jul. 13, 1978, 7613/78

Int. Cl.³ G04B *19/04*; G04F *10/00*; G04B *10/04*

U.S. Cl. 368—66 **4 Claims**



1. An electronic timepiece comprising:

a power source,

means for producing data relative to the seconds of the actual time and a signal relative to the minutes of the actual time,

means for producing actual time independent data,

means for selecting either said data relative to the seconds of the actual time or said actual time independent data in response to a first manually produced control signal,

a bidirectional stepping motor responsive to forward or backward driving pulses,

a seconds hand driven by said motor,

a minutes hand and an hours hand coupled to said seconds hand,

means for producing data relative to the position of said seconds hand in response to control pulses,

means responsive to the difference between said selected data and said seconds hand position data and to the sign of said difference for producing said control pulses and either said forward or said backward driving pulses, to cause said motor to drive said seconds hand to a position corresponding to said selected data, and

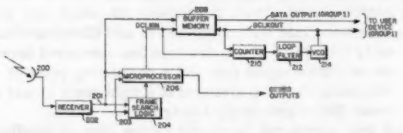
means for producing a predetermined number of said forward driving pulses in response to said minutes signal when said selected data is said actual time independent data, to cause said motor to drive said seconds hand for a complete clockwise turn, said minutes hand and said hours hand thus always indicating the minutes and the hours of the actual time.

4,259,738

MULTIPLEXER SYSTEM PROVIDING IMPROVED BIT COUNT INTEGRITY

Nathan A. Liskov, Waltham, and David L. Hendry, Framingham, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed May 18, 1979, Ser. No. 40,247
Int. Cl.³ H04J 3/06
U.S. Cl. 370—102 **16 Claims**



1. In combination:

means for transferring digital bits from a first serial digital data stream to assigned bit positions in a predetermined time interval of a second higher rate serial digital data stream, said bit positions being assigned for bits in addition to a predetermined number of bits of said first data stream always transferred during a predetermined time interval;

said transferring means comprising means responsive to the data rate of said first data stream with respect to the data rate of said second data stream for controlling the number of bits transferred into said bit positions;

means for providing a number derived from the number of bits transferred to said bit positions during a plurality of said predetermined time intervals;

means for deriving said first serial data stream from said second data stream comprising means responsive to said derived number for maintaining bit count integrity of said first serial data stream; and

said maintaining means comprising means for predicting an expected number based on previous derived numbers.

4,259,739

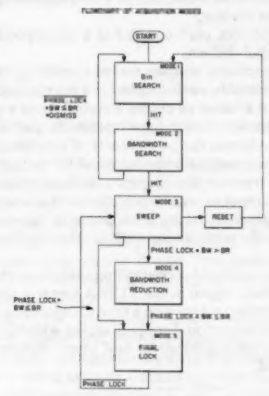
Patent Not Issued For This Number

4,259,740

SEQUENTIAL DETECTION SYSTEM

James L. Snell; Albert D. Darby, Jr., both of Palm Bay, and Raymond F. Cobb, Melbourne Beach, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Mar. 7, 1979, Ser. No. 18,329
Int. Cl.³ H04B 1/66
U.S. Cl. 375—99 **88 Claims**



1. In a communication system, wherein a transmitted signal containing data to be recovered and situated within a range of frequency uncertainty is located and acquired, said system including a receiver having a sequential detection arrangement for comparing an input signal to prescribed upper and lower thresholds and generating an output signal representative of the relationship of said input to said thresholds, the improvement comprising the steps of:

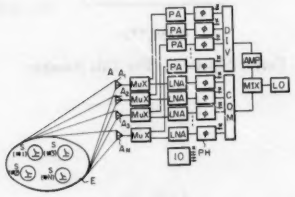
(a) coupling received signals as an input signal to said sequential detection arrangement and selectively tuning said receiver to a prescribed bandwidth containing said transmitted signal in response to the output of said sequential detection arrangement; and

(b) coupling received signals within said prescribed bandwidth to said sequential detection arrangement and selectively changing the frequency response characteristics of said receiver within said prescribed bandwidth in response to the output signal produced by said sequential detection arrangement, so as to enable said receiver to lock onto and acquire said transmitted signal.

4,259,741
SATELLITE RELAY SYSTEM

Makoto Kawai, Yokohama, Japan, assignor to Nippon Telegraph and Telephone Public Corp., Tokyo, Japan

Filed Mar. 5, 1979, Ser. No. 17,254
Claims priority, application Japan, Mar. 3, 1978, 53/23586
Int. Cl.³ H04B 7/185
U.S. Cl. 455—12 **7 Claims**



1. A TDMA satellite relay system comprising:

a power divider means having a single input and n output terminals where n is an integer, said power divider means receiving a TDMA input signal having a plurality of non-overlapped burst signals relating to a different earth station and distributing the power in said inut signal to each of said output terminals,

n phase shifters, each coupled to a corresponding output of said power divider,

n power amplifiers, each coupled to a corresponding output of said phase shifters,

a 2n-port directional coupler means consisting of n number of input terminals, each coupled to a corresponding power amplifier, n number of output terminals, and a plurality of couplers between said input terminals and said output terminals wherein the input power of any one of the input terminals is equally distributed to all the output terminals,

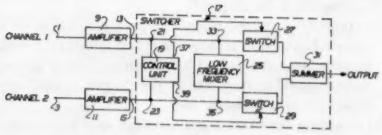
n number of transmission antennas, each coupled to a corresponding output of said 2n-port directional coupler means, and each antenna having a narrow spot beam covering a single specific earth station with no overlap therebetween, and

a phaseshifter control for controlling said phase shifters such that each burst signal in the TDMA signal is connected to a corresponding antenna on a time divisional basis through said 2n-port directional coupler means wherein said phase shifter control synchronizes said phase shifters with said burst signal.

4,259,742
ELECTRONIC SWITCHING SYSTEM FOR REDUCING NOISE TRANSIENTS

Richard C. Burns, 216 Stratford St., Syracuse, N.Y. 13210, and Thomas N. Packard, 4871 McDonald Rd., Syracuse, N.Y. 13215

Filed Nov. 6, 1978, Ser. No. 957,713
Int. Cl.³ H04L 1/02
U.S. Cl. 455—52 **16 Claims**



1. A system for controlling the transmission of electrical carrier signals according to the noise transients in a plurality of electrical carrier signals transmitted synchronously and simultaneously over separate channels, the carrier signals each including a corresponding program component and noise transients and the difference in the instantaneous magnitude of the signals being reflective of the difference in magnitude of their respective noise transients, said system comprising

summing means operably connected to the channels for adding the electrical signals carried by said channels and for transmitting the added electrical signals;

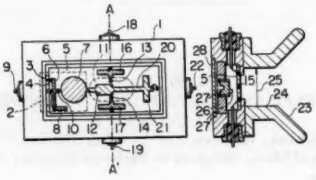
switching means operably connected to the channels and actuable for disabling said summing means from transmitting said added electrical signals and for enabling the transmission of the electrical signal being transmitted in a portion of said channels and;

control means operably connected to the channels for comparing the instantaneous magnitudes of the electrical signals carried on the channels, and for actuating said switching means when the difference in magnitude of the respective noise transients of said signals exceeds a predetermined value.

4,259,743
TRANSMIT/RECEIVE MICROWAVE CIRCUIT

Yoichi Kaneko, Tokorozawa; Kenji Sekine, Hinodemachi; Eiichi Hase, Hachioji, and Akira Endo, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 1, 1978, Ser. No. 965,699
Claims priority, application Japan, Dec. 9, 1977, 52/164615[U]
Int. Cl.³ H04B 1/54; G01S 13/60
U.S. Cl. 455—81 **5 Claims**



1. A transmit/receive microwave circuit device comprising:

a rectangular waveguide with an opening at one end thereof and a short-circuit plate at a second end thereof and propagating a singly polarized electric field;

a microwave integrated circuit plate on which two mixer diodes and lead lines connected to said diodes are collinearly arranged and which a lead line connected between an oscillation signal part and a connecting point of said two mixer diodes is arranged at a right angle to said two mixer diodes collinearly arranged,

and said microwave integrated circuit plate is installed at said second end end of said waveguide in such a manner that said lead line connected between the oscillation signal part and said connecting point of said mixer diodes is at a right angle to a direction of said electric field and that said mixer diodes and their lines collinearly arranged are parallel to the direction of said electric field in said waveguide.

4,259,744
SIGNAL GENERATOR

Michael T. Junod, and Albert M. Bates, both of Southampton, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 27, 1979, Ser. No. 70,204
Int. Cl.³ H04B 1/04; H03L 7/08; H03C 3/02
U.S. Cl. 455—103 **1 Claim**

1. A system for continuously producing a plurality of frequency modulated signals, comprising:

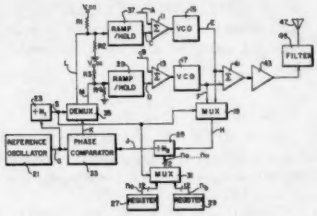
a plurality of first summing means adapted to receive respec-

tive ones of external modulation signals and connected to receive respective ones of continuous tuning signals for producing control signals, each having a voltage indicative of the sum of said respective modulation and continuous signals;

a plurality of voltage-controlled oscillator means responsive to respective ones of said control signals for producing the modulated signals;

tuning means having first multiplexing means connected to receive said modulated signals for passing one of the modulated signals during any one time in sequence, correction means connected to receive the one modulated signal for producing a correction signal for the one modulated signal proportional to any difference between the frequency of the one modulated signal and a reference signal of constant frequency, demultiplexing means connected to receive the correction signal for providing intermittent tuning signals, each intermittent signal being indicative of any variation of respective ones of said modulated signals from said reference signal of constant frequency, and timing means connected to receive the reference signal for providing a timing signal to said first multiplexing means, to said correction means and to said demultiplexing means to synchronize operation thereof; and

hold means connected to receive said intermittent signals and for producing said continuous signals.

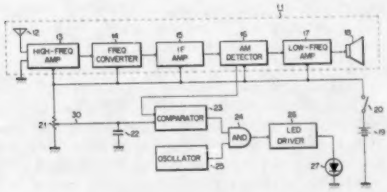


4,259,745

TUNING INDICATOR CIRCUIT

Norio Fukuoka, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1978, Ser. No. 944,004
Claims priority, application Japan, Sep. 30, 1977, 52/117555
Int. Cl.[3] H04B *1/16*; H03J *1/02*
U.S. Cl. 455—159 **5 Claims**



1. A tuning indicator circuit comprising a receiver, a detector circuit in said receiver for providing a detection output signal level of said receiver, a power source for supplying power to said receiver, means for detecting a tuned or untuned state of said receiver by comparing said detection output signal level of said receiver with a reference signal, means for indicating the power supply from said power source to said receiver and said tuned or untuned state, and means for controlling said indicating means so that said indicating means is rendered continuously on while said receiver is in said tuned state and so that said indicating means is turned on and off while said receiver is in said untuned state, said means for detecting the tuned or untuned state including:

a voltage divider having one end connected to said power source and the other end grounded and having an output terminal for providing said reference signal; and

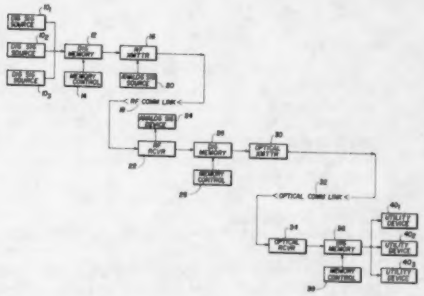
a comparator circuit having one input terminal connected with an output terminal of said detector circuit of said receiver and the other input terminal connected with the output terminal of said voltage divider.

4,259,746

ELECTRICAL COMMUNICATIONS SYSTEM

Gary O. Sandstedt, 3837 Harrison Blvd., Kansas City, Mo. 64109

Filed Oct. 26, 1979, Ser. No. 88,332
Int. Cl.[3] H04B *9/00*
U.S. Cl. 455—600 **36 Claims**



1. A communications system for electrical signals, comprising in combination:

a plurality of input signal sources generating respective electrical communications signals;

first memory means coupled to at least one of said plurality of input signal sources and including control means for controlling the inputting and storing of said electrical communications signals in said first memory means and upon command thereafter outputting said electrical communications signals therefrom;

first energy type transmitter means coupled to said first memory means and being responsive to the electrical communications signals outputted from said first memory means to generate a modulated signal including said electrical communications signals and coupling said carrier signal to a first energy type communications link;

first energy type receiver means coupled to said first energy type communications link and being responsive to said carrier signal to demodulate the carrier signal to reproduce said electrical communications signals;

second memory means coupled to said first energy type receiver means and including control means for controlling the inputting and storing of said electrical communications signals in said second memory means and upon another command, thereafter outputting the stored electrical communications signals from said second memory means;

second energy type transmitter means coupled to said second memory means and being responsive to said electrical signals outputted from said second memory means to generate a modulated carrier signal including said electrical communications signals and coupling said carrier signal to a second energy type communications link;

second energy type receiver means coupled to said second energy type communications link and being responsive to said last recited carrier signal to demodulate the carrier signal to reproduce said electrical communications signals;

third memory means coupled to said second energy type receiver means and including control means for controlling the inputting and storing of said communications signals into said third memory means and upon yet another command thereafter outputting the data from said third memory means; and

at least one utilization device coupled to said third memory means and being responsive to the electrical communications signals outputted therefrom to perform a desired task depending upon the nature of said electrical communications signals fed thereto.

DESIGN PATENTS

GRANTED MAR. 31, 1981

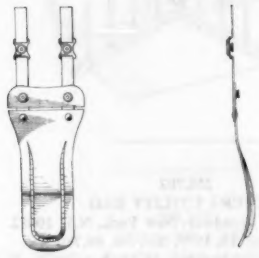
ERRATA

For CLASS	See PATENT NO.
D99–047	258,721
D07–076	258,723
D08–394	258,724

DESIGNS

MARCH 31, 1981

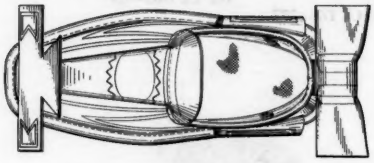
258,695
THROAT PROTECTING ATTACHMENT FOR A BASEBALL CATCHER'S MASK
Donald L. Doyle, 1417 Oakmont, Roseville, Calif. 95678
Filed Sep. 5, 1978, Ser. No. 939,351
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—234



258,696
NURSE'S HEADWEAR
Catherine C. Evans, Milwaukee, Wis., assignor to Will Ross Inc., Milwaukee, Wis.
Filed Apr. 19, 1979, Ser. No. 31,699
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—237

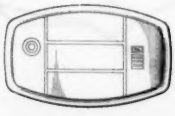
258,697
CROSS COUNTRY SKI BOOT
Kjell Aarflot, Gardeveien 2, Oslo 3, Norway
Filed Apr. 20, 1978, Ser. No. 898,540
Claims priority, application Norway, Oct. 24, 1977, 58666
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—276

258,698
SIMULATIVE SPORTS SHOE
William J. Cohen, Braintree, Mass., assignor to CITC Industries Inc., New York, N.Y.
Filed Jul. 17, 1978, Ser. No. 925,622
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—279

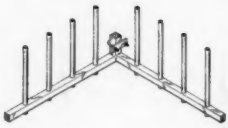


258,699
INFLATABLE BOOT TREE
Joseph M. McPherson, 3104 E. 37th St., Minneapolis, Minn. 55406
Filed Apr. 30, 1979, Ser. No. 34,959
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—378.1

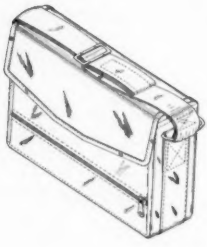
258,700
BELT BUCKLE
Robert Fletcher, Los Angeles, Calif., assignor to Paramount Pictures Corporation, Los Angeles, Calif.
Filed Apr. 10, 1979, Ser. No. 28,844
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—447



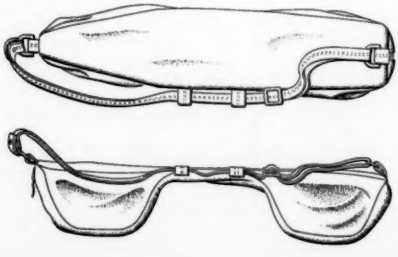
258,701
THREAD STAND
Lee R. McQueen, El Paso, Tex., assignor to Levi Strauss & Co., San Francisco, Calif.
Filed Oct. 2, 1978, Ser. No. 948,046
Term of patent 14 years
Int. Cl. D06—*99*
U.S. Cl. D3—25



258,702
CAMERA UTILITY BAG
Robert Weinreb, 510 Broadway, New York, N.Y. 10012
Filed Oct. 15, 1979, Ser. No. 84,780
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—33

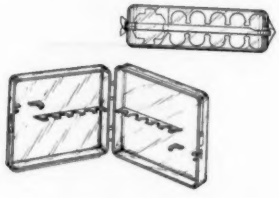


258,703
CARRYING CASE FOR A SKATEBOARD
Lawrence E. Ogle, P.O. Box 775, Los Alamitos, Calif. 90720, and Hiram McFarlin, San Diego, Calif., assignors to Lawrence E. Ogle
Continuation-in-part of Ser. No. 805,736, Jun. 13, 1977, abandoned. This application Jun. 11, 1979, Ser. No. 47,092
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—36



258,704
COMBINED CHECK BOOK COVER AND CALCULATOR
Hiroshi Kobayashi, 2910 S. Peck Ave., San Pedro, Calif. 90731
Filed Mar. 7, 1978, Ser. No. 884,260
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—56

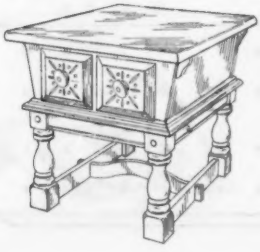
258,705
TOOL KIT CASE
Roger W. Wheeler, Reading, Mich., assignor to Vaco Products Company
Filed Dec. 14, 1977, Ser. No. 860,490
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—74



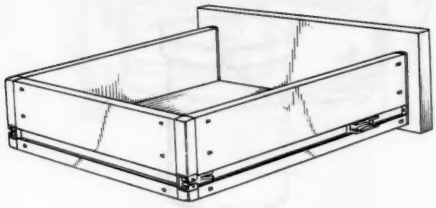
258,706
ARMCHAIR
Karl Lübke, Rheda, Fed. Rep. of Germany, assignor to Karl Lubke GmbH & Co. KG., Rheda, Fed. Rep. of Germany
Filed Jun. 29, 1978, Ser. No. 920,230
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1978, 1065
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73

258,707
DISPENSER
Joel N. Lippman, Kenmore, and Melvin A. Lippman, Snyder, both of N.Y., assignors to Banite, Inc., Buffalo, N.Y.
Filed Nov. 13, 1978, Ser. No. 959,715
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—95

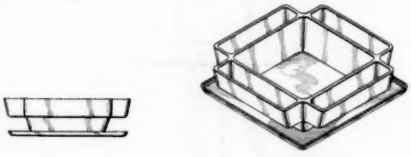
258,708
OCCASIONAL TABLE
Melbourne F. Smith, Jr., Hickory, N.C., assignor to Broyhill Furniture Industries, Inc., Lenor, N.C.
Filed Sep. 22, 1978, Ser. No. 945,140
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



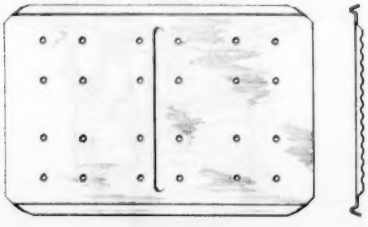
258,709
DRAWER
Leon G. Litchfield, and Terence Hardy, both of Belper, England, assignors to L. B. (Plastics) Limited, Belper, England
Filed Jan. 27, 1978, Ser. No. 872,956
Claims priority, application United Kingdom, Jul. 29, 1977, 980963/77
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



258,710
COMPARTMENTED DISH
Edith M. Walker, 6535 Premier Dr., #H-23, Nashville, Tenn. 37209
Filed Feb. 21, 1978, Ser. No. 879,700
Term of patent 14 years
Int. Cl. D07—*01;* D11—*02*
U.S. Cl. D7—4

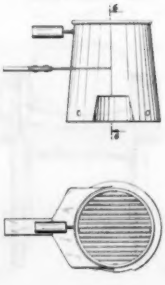


258,711
TRAY FOR HAMBURGER BUNS OR THE LIKE
Edward D. Baker, San Francisco, and Nils Lang-Ree, Los Altos, both of Calif., assignors to NPI Corporation, Burlingame, Calif.
Filed Apr. 3, 1978, Ser. No. 893,135
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—37



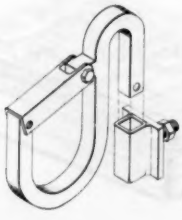
258,712
BEVERAGE SERVER
Arnold Jacobson, 11921 Weddington St. Apartment 203, North Hollywood, Calif. 91603
Filed Apr. 16, 1979, Ser. No. 30,344
Term of patent years
Int. Cl. D07—*01*
U.S. Cl. D7—65

258,713
COMBINED CHARCOAL STARTER AND GRILL OR THE LIKE
William C. Harper, 5522 Selton Ave., Jacksonville, Fla. 32211
Filed Feb. 21, 1979, Ser. No. 13,378
Term of patent 14 years
Int. Cl. D7—*02;* D23—*99*
U.S. Cl. D7—110



258,714
NAIL SCISSORS
Olof F. Bäckström, Tammisaari, Finland, assignor to Oy. Fiskars AB, Helsinki, Finland
Filed Jul. 6, 1977, Ser. No. 813,372
Claims priority, application Finland, Jan. 6, 1977, 3/77
The portion of the term of this patent subsequent to Nov. 23, 1990, has been disclaimed.
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—57

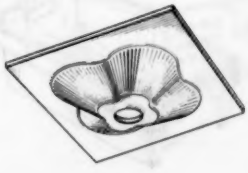
258,715
COMBINED BRACKET AND LOCKING SUPPORT HOOK UNIT FOR HOLDING TRUCK TIRE CHAINS WHILE NOT IN USE
Donald G. Gipson, 221 Manzanita Ave., Red Bluff, Calif. 96080
Filed Jul. 17, 1978, Ser. No. 925,410
Term of patent 14 years
Int. Cl. D8—*07, 08*
U.S. Cl. D8—333



258,716
LOCK BOLT COVER PLATE
David M. Ciener, P.O. Box 288M, Geneva, Fla. 32732
Filed Dec. 4, 1978, Ser. No. 966,472
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—343

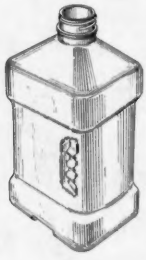
258,717
SECURITY PLATE
Lawrence D. Williams, 1086 Victoria, Windsor, Ontario, Canada
Filed Jul. 6, 1978, Ser. No. 922,372
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—346

258,718
MINE ROOF SUPPORT PLATE
Alvaro L. Collin, Orinda, and Gordhan M. Patel, Cerritos, both of Calif., assignors to Kaiser Steel Corporation, Oakland, Calif.
Filed Aug. 21, 1978, Ser. No. 935,746
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—399

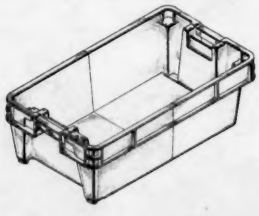


258,719
PRESSURIZED DISPENSING CONTAINER
Pierre Dinand, Levallios, France, assignor to Jovan, Inc., Chicago, Ill.
Filed May 15, 1978, Ser. No. 906,137
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—300

258,720
BOTTLE
William M. Evans, Mundelein, Ill., and David A. Winchell, Twin Lakes, Wis., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Continuation-in-part of Ser. No. 898,511, Apr. 20, 1978. This application May 3, 1979, Ser. No. 35,696
Term of patent 7 years
Int. Cl. D9—*01*
U.S. Cl. D9—370

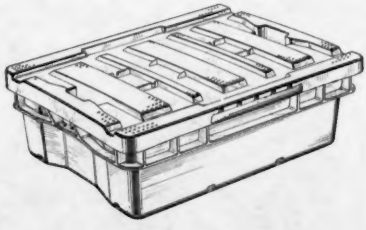


258,721
TOTE BOX
Elie C. Steeg, Paris, France, assignor to Allibert Exploitation S.A., Grenoble, France
Filed Sep. 29, 1978, Ser. No. 946,848
Claims priority, application France, Mar. 31, 1978, 78 2480
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D99—47



258,722
HINGED LID FOOD CONTAINER OR THE LIKE
Nicholas D. Commisso, Victor, and Dwight O. Palmer, Rochester, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Jan. 5, 1979, Ser. No. 1,250
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—423

258,723
COMBINED STORAGE AND DRAINAGE CONTAINER FOR SEAFOOD OR THE LIKE
Jean Cornou, Essonne, France, assignor to Allibert Exploitation, Grenoble, France
Filed Apr. 18, 1978, Ser. No. 898,325
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D7—76

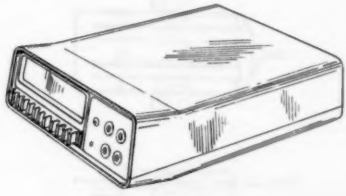


258,724
BALE TIE
George R. McCutchen, 1401 - 24th Ave. East, Cordele, Ga. 31015
Filed Nov. 6, 1978, Ser. No. 957,751
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—394

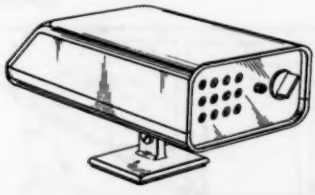
258,725
ALARM CLOCK
Robert Hocq, Boulogne-Billancourt, France, assignor to Cartier International B.V., Amsterdam, Netherlands
Filed Jul. 5, 1978, Ser. No. 922,160
Claims priority, application France, Jan. 4, 1978, 78 40916
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—22

258,726
FLEXIBLE HOLDER FOR A DIAL TEST INDICATOR
Robert E. Leutz, 1090 El Camino, Redwood City, Calif. 94063
Filed Feb. 5, 1979, Ser. No. 9,488
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—74

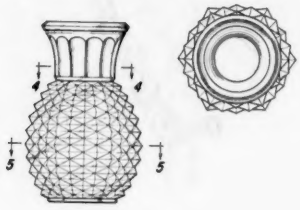
258,727
DIGITAL MULTIMETER OR SIMILAR ARTICLE
Nicholas D. Swinstead, Church Crookham, England, assignor to Solartron Electronic Group Limited, Farnborough, England
Filed Jun. 1, 1978, Ser. No. 913,262
Claims priority, application United Kingdom, Dec. 13, 1977, 982601/77
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—78



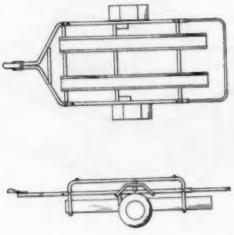
258,728
VEHICLE RADAR DETECTOR HOUSING
Ronald E. Natinsky, Dallas, Tex., assignor to Brinkmann Corporation, Dallas, Tex.
Filed Aug. 9, 1977, Ser. No. 823,192
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—104



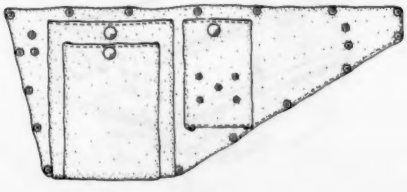
258,729
VASE
Arthur L. Harshman, Dunkirk, Ind., and Martin J. Waterfield, Birmingham, Mich., assignors to Florists' Transworld Delivery Association, Southfield, Mich.
Filed Jul. 11, 1979, Ser. No. 56,453
Term of patent 7 years
Int. Cl. D11—*02*
U.S. Cl. D11—154



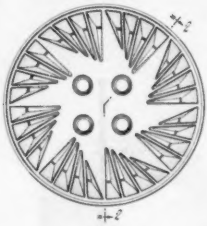
258,730
TRAILER
Allan G. Jenkins, 16 Catalina Crescent, Milford, Auckland, New Zealand
Filed Aug. 1, 1978, Ser. No. 930,050
Claims priority, application New Zealand, Feb. 10, 1978, 15355
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—101



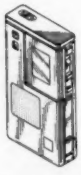
258,731
BICYCLE BAG
Debra Fleischman, and David A. Rick, 5350 Strohm #20, both of N. Hollywood, Calif. 91601
Filed Jun. 4, 1979, Ser. No. 45,200
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—158



258,732
VEHICLE WHEEL
John R. Schinella, Bloomfield Hills, Mich., assignor to General Motors Corporation
Filed Nov. 8, 1979, Ser. No. 92,473
Term of patent 7 years
Int. Cl. D12—*16*
U.S. Cl. D12—211



258,733
PORTABLE DICTATION MACHINE OR THE LIKE
Gordon P. Bruce, New Milford; Allen D. Hawthorne, New Canaan, both of Conn., and Eliot F. Noyes, deceased, late of New Canaan, Conn. by Mary D. Noyes; New England Merchants National Bank, co-executors, assignors to International Business Machines Corp., Armonk, N.Y.
Filed Sep. 22, 1978, Ser. No. 944,939
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—3



258,734
RECORD PLAYER
Marion Leach, 9 Wilson La., Chelmsford, Mass. 01863
Filed Apr. 28, 1978, Ser. No. 900,931
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—17

258,735

DISPLAY SCREEN—TERMINAL

Hartmut Esslinger; Andreas Haug, and Georg Spreng, all of Altensteig, Fed. Rep. of Germany, assignors to CTM Computertechnik Müller GmbH, Konstanz, Fed. Rep. of Germany

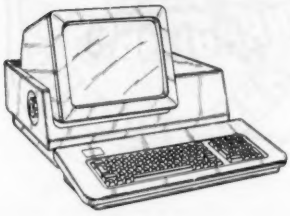
Filed Sep. 18, 1978, Ser. No. 944,328

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1978, 193

Term of patent 7 years

Int. Cl. D14—*02*

U.S. Cl. D14—43



258,736

OPERATOR'S TELEPRINTER CONSOLE

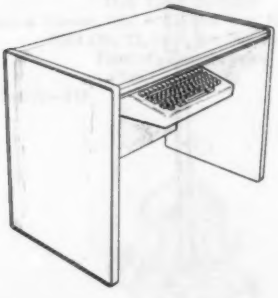
Donald M. Genaro, Haworth, N.J., and Gordon Sylvester, Jamaica, N.Y., assignors to Teletype Corporation, Skokie, Ill.

Filed Jul. 3, 1978, Ser. No. 908,412

Term of patent 14 years

Int. Cl. D14—*03*; D6—*04*

U.S. Cl. D14—93



258,737

REAR DUMP REFUSE COMPACTOR

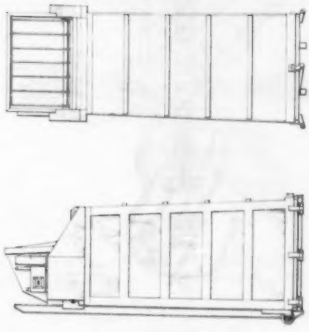
Lewis W. Schmidt, Rio Vista, Calif., assignor to Blackwelders, Rio Vista, Calif.

Filed Jul. 21, 1978, Ser. No. 926,916

Term of patent 14 years

Int. Cl. D15—*09*

U.S. Cl. D15—123



258,738

LENS SUPPORT FOR SLIDE PROJECTOR

Howard S. Gudgel, 7326 E. 59th Pl., Tulsa, Okla. 74145

Filed Feb. 27, 1978, Ser. No. 881,869

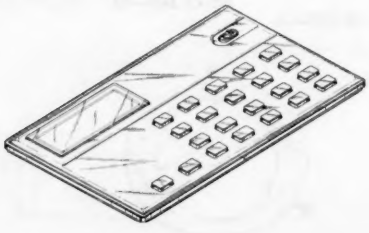
Term of patent 14 years

Int. Cl. D16—*02*

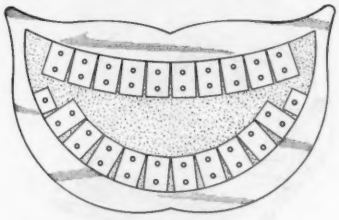
U.S. Cl. D16—26

258,739
GUITAR
Charles H. Todd, III, Meridian, Miss., assignor to Peavey Electronics Corp., Meridian, Miss.
Filed Dec. 19, 1979, Ser. No. 105,353
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—14

258,740
ELECTRONIC DESK TOP CALCULATOR
Hidero Matsumoto, Hoya, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 894,646, Apr. 7, 1978, abandoned, and Ser. No. 892,470, Mar. 31, 1978, abandoned. This application May 24, 1978, Ser. No. 908,996
Claims priority, application Japan, Oct. 8, 1977, 52-40226
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7

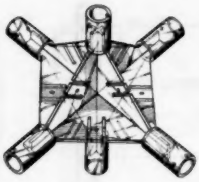


258,741
GAME BOARD
Sakari Linna, Hil Sakari Linna Kauppakatu 13 B, and Kari Ulvio, Hil Kari Ulvio Kauppakatu 13 B, both of 08100 Lohja 10, Finland
Filed Jul. 17, 1978, Ser. No. 925,604
Claims priority, application Finland, Feb. 20, 1978, 95/78
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—32

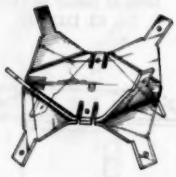


258,742
SQUIRTING WATER TOY
Jordy Z. Adamson, Box 98, Payson, Utah 84651; Charles B. Palmer, 1397 E. 5440 South, Salt Lake City, Utah 84117, and Wade M. Ebling, Box 99, Willard, Utah 84340
Filed Oct. 16, 1978, Ser. No. 951,844
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D21—59

258,743
STRUCTURAL CONNECTOR
Wayne Ruga, 2163D Coosawattee Rd., Atlanta, Ga. 30319
Filed Jul. 12, 1977, Ser. No. 815,193
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—108

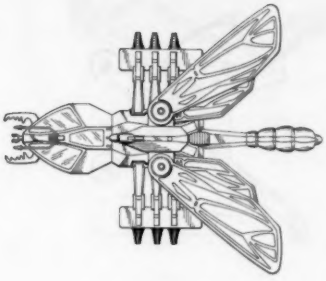


258,744
ANGLED STRUCTURAL CONNECTOR
Wayne Ruga, 2163D Coosawattee Rd., Atlanta, Ga. 30319
Filed Aug. 8, 1977, Ser. No. 822,784
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—108

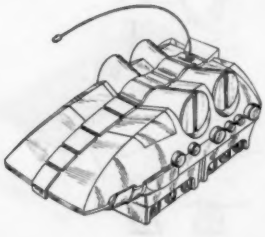


258,745
TOY TREE HOUSE
Dalphine A. Pavone, 1667 E. Caracas Ave., Hershey, Pa. 17033
Filed Oct. 12, 1978, Ser. No. 950,702
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—115

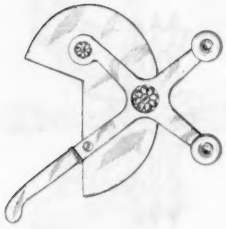
258,746
SIMULATIVE TOY VEHICLE
Lawrence T. Jones, Playa Del Rey; Robert S. Lee, Westlake, and Anson Sims, Granada Hills, all of Calif., assignors to California R & D Center, Culver City, Calif.
Filed Feb. 9, 1979, Ser. No. 10,831
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—128



258,747
TOY VEHICLE
William K. Burtoft, Cincinnati, Ohio, and Thomas J. Troy, Eden Prairie, Minn., assignors to CPG Products Corp., Minneapolis, Minn.
Filed Jun. 4, 1979, Ser. No. 45,029
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—128



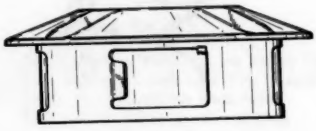
258,748
TOY BABY BUGGY OR SIMILAR ARTICLE
James R. Livesey, Fountain Valley, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 15, 1979, Ser. No. 12,524
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—134



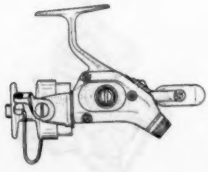
258,749
THUMB SUCKING DOLL
Deanne Studd, Peninsula, Low St., Horning, Norfolk, England
Filed Nov. 17, 1978, Ser. No. 961,539
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—175

258,750
PUTTER GRIP
Allan D. Hallaman, Akron, Ohio, and Dennis Wyckoff, Laurinburg, N.C., assignors to Eaton Corporation, Cleveland, Ohio
Filed Apr. 20, 1979, Ser. No. 31,716
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—222

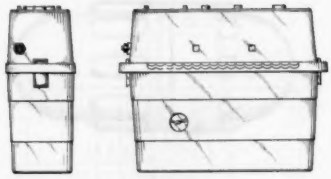
258,751
INSECT TRAP
Donald C. Lindley, Torrance, Calif., assignor to Farnam Companies, Inc., Phoenix, Ariz.
Filed Oct. 30, 1978, Ser. No. 956,215
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—19



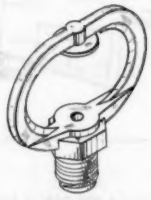
258,752
SPINNING REEL
Akira Nara, 993, Yamami, Inami-cho, Higashi-Tonami-gun, Toyama, Japan
Filed Aug. 15, 1979, Ser. No. 66,840
Term of patent 7 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



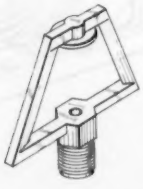
258,753
DRINKING WATER PROCESSOR
Robert C. Lampe, Stamford, and George Schick, Easton, both of Conn., assignors to Electrolux Corporation, Old Greenwich, Conn.
Filed Sep. 18, 1978, Ser. No. 944,490
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—03



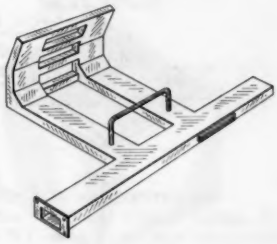
258,754
IRRIGATION SPRAY NOZZLE
Carl E. Addison, and Rocky J. Comes, both of R.R. 1, Cimarron, Kans. 67835
Continuation-in-part of Ser. No. 881,880, Feb. 27, 1978. This application Jul. 16, 1979, Ser. No. 58,003
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



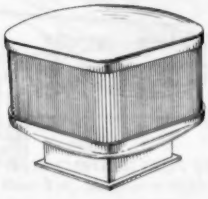
258,755
IRRIGATION SPRAY NOZZLE
Carl E. Addison, R.R. 1, Cimarron, Kans. 67835, and Rocky J. Comes, Box 24, Offerle, Kans. 67563
Continuation-in-part of Ser. No. 881,880, Feb. 27, 1978, Pat. No. D. 253,842, Ser. No. 58,003, Jul. 16, 1979, Ser. No. 113,082, Jan. 17, 1980, Ser. No. 113,084, Jan. 17, 1980, and Ser. No. 113,090, Jan. 17, 1980. This application Apr. 1, 1980, Ser. No. 136,278
Apr. 1, 1980, Ser. No. 136,278
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



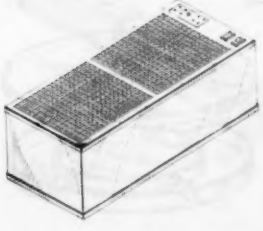
258,756
MANIFOLD FOR A FORCED AIR FIREPLACE FURNACE
Hal Larson, Milton-Freewater, Oreg., assignor to Woodcutters Manufacturing, Inc., Walla Walla, Wash.
Filed Dec. 26, 1978, Ser. No. 972,810
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127



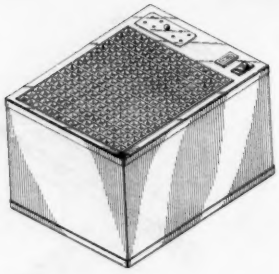
258,757
EVAPORATIVE COOLER
Richard C. Jordan, P.O. Box 1385, Carefree, Ariz. 85377
Filed Jan. 29, 1979, Ser. No. 7,063
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—139



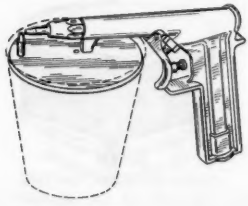
258,758
COMBINED AIR FILTER AND FRESHENER
Kenneth O. Johnson, Rte. 5, Riverhaven, St. Cloud, Minn. 56301
Filed Jan. 15, 1979, Ser. No. 3,221
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—146



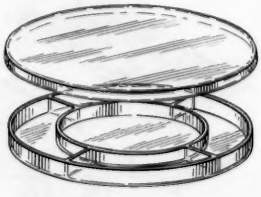
258,759
COMBINED AIR FILTER AND FRESHENER
Kenneth O. Johnson, Rte. 5, Riverhaven, St. Cloud, Minn. 56301
Filed Jan. 15, 1979, Ser. No. 3,303
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—146



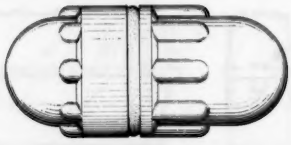
258,760
PAINT SPRAY GUN
Melford H. Docken, Chippewa Falls, Wis., assignor to Loren L. Brown, Rockford, Minn.
Filed Feb. 28, 1980, Ser. No. 105,979
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—18



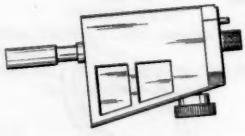
258,761
DISPOSABLE CULTURE DEVICE OR THE LIKE
Herbert B. Graham, Silver Spring, Md., assignor to Precision Media Inc., Winchester, Va.
Filed Mar. 23, 1978, Ser. No. 889,510
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—8



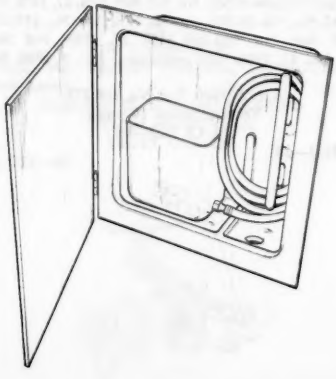
258,762
DENTAL AMALGAM CAPSULE
Daniel J. Corrigan, 620 Hubble St.; Daniel J. Corrigan, 904 Burr St., both of Davis, Calif. 95616, and Norman N. Abrahams, 208 Montclair Rd., Los Gatos, Calif. 95030
Filed Nov. 2, 1978, Ser. No. 957,201
Term of patent 14 years
Int. Cl. D24—*02, 04*
U.S. Cl. D24—10



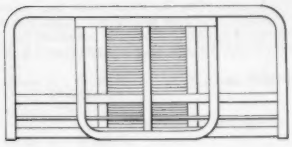
258,763
DENTAL ARTICULATOR GUIDE BLOCK
Robert L. Lee, 22937 Grand Ter., Colton, Calif. 92324
Filed Nov. 30, 1978, Ser. No. 964,980
Term of patent 14 years
Int. Cl. D24—*02, 99*
U.S. Cl. D24—16



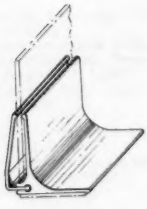
258,764
WALL MOUNTED FEMININE HYGIENE UNIT
Patsie W. Black, Rte. 1, Wister, Okla. 74966
Filed Nov. 18, 1977, Ser. No. 853,630
Term of patent 14 years
Int. Cl. 24—*04*
U.S. Cl. D24—60



258,765
TRANSIT SHELTER
Joseph E. Kinnebrew, IV, 13300 Beckwith Dr., NE., Lowell, Mich. 49331
Filed Mar. 28, 1979, Ser. No. 24,542
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—18

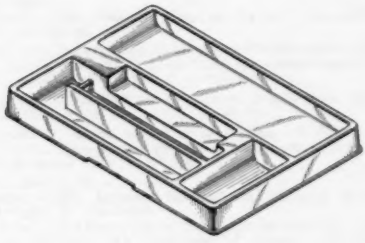


258,766
STORM WINDOW MOLDING
Stanley Gold, 44 W. Lake Blvd., Mahopac, N.Y. 10541
Filed Jan. 28, 1980, Ser. No. 116,238
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



258,767
LIGHTER
Franz A. Stützer, Mühlheim am Main, Fed. Rep. of Germany, assignor to Rowenta-Werke, GmbH, Offenbach am Main, Fed. Rep. of Germany
Filed Aug. 3, 1978, Ser. No. 930,627
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 510076
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42

258,768
TRAY FOR HAIRSETTER KIT
Lynda Haran, New York, and Cynthia Travers, Briarcliff Manor, both of N.Y., assignors to Clairol Incorporated, New York, N.Y.
Filed May 21, 1979, Ser. No. 40,837
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—9



258,769
HANDLE FOR HAIR CURLING IRON OR THE LIKE
Robert Karch, El. Paso, Tex., assignor to Helen of Troy Corporation, El Paso, Tex.
Filed Mar. 17, 1978, Ser. No. 887,778
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—35

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 31ST DAY OF MARCH, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See*—
Lippmann, Irwin; Popli, Shankar D.; Miller, Larry G.; and Bell, Louis G., 4,259,315, Cl. 424-37.000.

Aalrust, Per O.: *See*—
Scheiber, Werner; and Aalrust, Per O., 4,258,505, Cl. 51-7.000.

Aaltonen, Olavi A.; and Makiren, Juho K., to Outokumpu Oy. Process for the roasting and chlorination of finely-divided iron ores and concentrates containing non-ferrous metals. 4,259,106, Cl. 75-7.000.

Aaron, Gilles; and Hekimian, Guy, to U.S. Philips Corporation. Device for compressing binary signals. 4,259,693, Cl. 358-261.000.

AB Bofors: *See*—
Franzon, Hans A.; Gustafsson, Jan K.; and Nilsson, Per-Erik, 4,258,811, Cl. 177-200.000.

Abbott Laboratories: *See*—
Harms, Jack L.; Genese, Joseph N.; and Muetterties, Andrew J., 4,258,712, Cl. 128-214.00G.

Abe, Kazunobu; Tamura, Shoichi; and Matsuda, Tosiaki, to Saki Chemical Industry Co., Ltd. Method of continuously extruding and molding ceramic honey-comb shaped moldings and die for use in the continuous extruding operation thereof. 4,259,057, Cl. 425-463.000.

Abe, Yoshiaki, to Diesel Kiki Co., Ltd. Control apparatus for glow plugs provided for a diesel engine. 4,258,678, Cl. 123-179.00H.

ACF Industries, Incorporated: *See*—
Dare, Roy R.; Houlgrave, Robert C.; and Shelton, William S., 4,258,743, Cl. 137-327.000.
Pearson, Arthur C.; and Sieg, Robert A., 4,258,830, Cl. 188-52.000.

Achen, John J. Turntable for colorant dispensers. 4,258,759, Cl. 141-100.000.

Aciers et Outillage Peugeot: *See*—
Pouget, Rene J., 4,258,945, Cl. 292-68.000.

Ackeret, Peter, to IDN Inventions and Development of Novelties AG. Magnetic tape cassette container support. 4,258,961, Cl. 312-111.000.

Acme Visible Records, Inc.: *See*—
Grubb, Frederick H., Jr., 4,258,966, Cl. 312-305.000.

Adamek, David: *See*—
Webinger, George P.; and Adamek, David, 4,258,874, Cl. 229-23.0BT.

Adamo, Joseph C.: *See*—
Joice, Richard L.; and Adamo, Joseph C., 4,259,134, Cl. 156-251.000.

Adams, Ellsworth C.: *See*—
Stoody, Richard R., Jr.; and Adams, Ellsworth C., 4,258,673, Cl. 123-90.340.

Adams, John B., Jr.; and Wommack, Joel B., Jr., to Du Pont de Nemours, E. I., and Company. Herbicidal ethers. 4,259,532, Cl. 568-649.000.

Adcock, Michael R.; and Ditmars, Charles D. Fish scaler. 4,258,452, Cl. 17-51.000.

Adler, Michael S.; and Temple, Victor A. K., to General Electric Company. High switching speed P-N junction devices with recombination means centrally located in high resistivity layer. 4,259,683, Cl. 357-64.000.

Advance Biofactures Corporation: *See*—
Wiesner, Karel; and Tsai, Thomas Y. R., 4,259,240, Cl. 260-239.55R.

Advertising Metal Display Company: *See*—
Craine, John C., 4,258,892, Cl. 248-220.400.

Aga, Toshio: *See*—
Sawayama, Takehiro; Ito, Ichizo; Aga, Toshio; and Ando, Tetsuo, 4,258,565, Cl. 73-141.00R.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Pezat, Michel; Hbika, Abdelmalek; Darriet, Bernard; and Hagenmuller, Paul, 4,259,110, Cl. 75-168.00J.
Roussy, Georges; Berteaud, Andre-Jean; and Thiebaut, Jean-Marie, 4,259,561, Cl. 219-10.55A.

AGF Inc.: *See*—
Korzeb, Frank; and Bayly, William I., 4,259,060, Cl. 432-3.000.

AGFA-Gevaert, A.G.: *See*—
Lermann, Peter; Engelsmann, Dieter; Maas, Dieter; and Nicko, Reinhard, 4,258,998, Cl. 354-173.000.
Schmidt, Manfred; and Farber, Heinrich, 4,259,586, Cl. 250-481.000.

AGFA-GEVAERT N.V.: *See*—
Gilliams, Yvan K.; De Winter, Walter F.; and Timmerman, Daniel M., 4,259,429, Cl. 430-124.000.

Agricultural Production and Vegetable Products, Ltd.: *See*—
Duthie, Iain F., 4,259,358, Cl. 426-46.000.

Ahmad, Umar M. U.: *See*—
Hennion, Francis J.; deBarbadillo, John J.; and Ahmad, Umar M. U., 4,259,296, Cl. 423-53.000.

Ahtiainen, Ari J., to OT-tehdas Oy. Continuous action capacitive moisture measuring apparatus. 4,259,632, Cl. 324-61.00R.

Aichert, Hans; Stark, Friedrich; Stephan, Herbert; and Hoffmann, Otto-Horst, to Leybold-Heraeus GmbH. Coupling for stationary and movable vacuum chambers. 4,258,645, Cl. 118-50.000.

Aida Engineering, Ltd.: *See*—
Imanishi, Shozo; Umezawa, Fumiaki; Ishida, Toshiya; and Nakayama, Harutsugu, 4,259,052, Cl. 425-135.000.

Aimants Ugimag S.A.: *See*—
Boeuf, Jean-Marie; Gerest, Pierre; and Lemaire, Henri, 4,259,197, Cl. 252-62.580.

Air Products and Chemicals, Inc.: *See*—
Miller, Gerald D., 4,258,849, Cl. 206-812.000.

Aisan Industry Co., Ltd.: *See*—
Arai, Hisaharu; Sato, Masami; and Kadowaki, Kunio, 4,258,685, Cl. 123-520.000.

Aisin Seiki Co., Ltd.: *See*—
Nakashima, Katsushi, 4,258,549, Cl. 60-588.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Akabane, Tadashi; and Tamura, Tooru, 4,259,099, Cl. 55-482.000.

Aizawa, Tatsuo: *See*—
Yamagata, Ryutaro; Matsuo, Sohei; Koyama, Shigeo; Kozuka, Nobuhiko; Tohi, Yasusuke; and Aizawa, Tatsuo, 4,259,008, Cl. 355-29.000.

Ajimine, Akio: *See*—
Ishikawa, Masao; Nakamura, Kenji; and Ajimine, Akio, 4,258,643, Cl. 116-286.000.

Aka, Peter; and Grunert, Manfred, to Mollers Maschinenfabrik GmbH. Apparatus for fitting shrunk on-foil hoods into recessed portions of a multi-layered stack. 4,258,533, Cl. 53-557.000.

Akabane, Tadashi; and Tamura, Tooru, to Aisin Seiki Kabushiki Kaisha. Gas filter device. 4,259,099, Cl. 55-482.000.

Akao, Mutsuo; Kashiwagi, Kenzo; and Inoue, Koji, to Fuji Photo Film Co., Ltd. Packaging material for photosensitive materials comprising polyolefin layers. 4,258,848, Cl. 206-524.200.

Akazawa, Susumu: *See*—
Shinkai, Kinya; Akazawa, Susumu; and Tominaga, Kiyonori, 4,259,687, Cl. 358-67.000.

Akers, John B.; and Peters, David C., to Internationale Octrooi Maatschappij "Octropa" B.V. Treatment of effluent. 4,259,251, Cl. 260-412.500.

Aktiebolaget Carl Munters: *See*—
Hallgren, Karl, 4,258,656, Cl. 118-666.000.

Aktiebolaget SKF: *See*—
Kunkel, Heinrich; Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Ernst, Horst M., 4,258,806, Cl. 175-370.000.

Akwei, Samuel A. Skewer. 4,258,617, Cl. 99-419.000.

Akzona Incorporated: *See*—
Zengel, Hans-Georg; and Bergfeld, Manfred, 4,259,258, Cl. 260-543.00A.

Alafandi, Hamid; and Stamires, Dennis, to Filtrol Corporation. Crystalline alumino silicate-silica-alumina gel hydrocarbon conversion catalysts and processes for producing same. 4,259,210, Cl. 252-438.000.

Albert, Richard D. Plural image signal system for scanning x-ray apparatus. 4,259,582, Cl. 250-402.000.

Albert, Richard D. Image region selector for a scanning X-ray system. 4,259,583, Cl. 250-416.0TV.

Albert Rolland S.A.: *See*—
Laforest, Jacqueline; Bonnet, Jacqueline; and Bessin, Pierre, 4,259,509, Cl. 549-77.000.

Alberta Research Council: *See*—
Ignasiak, Boleslaw, 4,259,083, Cl. 44-1.00F.

Albertson, Clarence E.; Nichols, George M.; and Rasmussen, John N., to Borg-Warner Corporation. Boiling heat transfer surface, method of preparing same and method of boiling. 4,258,783, Cl. 165-133.000.

Albertsson, Peter: *See*—
Vlastos, Antonios; Albertsson, Peter; and Eriksson, Rolf, 4,259,093, Cl. 55-137.000.

Alexander, Alexander J. Skateboard arena. 4,258,911, Cl. 272-3.000.

Alexander, Robert H.: *See*—
Campbell, Gordon D.; Alexander, Robert H.; and Atwell, George C., 4,258,798, Cl. 173-168.000.

Alkron Manufacturing Corp.: *See*—
Hoffmann, George T., 4,258,598, Cl. 82-38.00R.

Aller, Harold E.; Kilbourn, Edward E.; Weiler, Ernest D.; and Weir, William D., to Rohm and Haas Company. Nematocidal phosphoramidates. 4,259,330, Cl. 424-200.000.

Allied Chemical Corporation: *See*—
Gilman, John J.; and Saunders, Ralph R., 4,258,756, Cl. 138-142.000.
Hasegawa, Ryusuke, 4,259,109, Cl. 75-123.00B.

Mares, Frank; Jacobson, Stephen E.; and Tang, Reginald T., 4,259,527, Cl. 568-311.000.
Sifniades, Stylianos; Lahav, Meir; and Boyle, William J., Jr., 4,259,239, Cl. 260-239.30R.

Allied Colloids Limited: *See—*
Flesher, Peter; and Johnson, Ian M., 4,259,023, Cl. 366-220.000.

Allied Systems Company: *See—*
Keagbine, Francis R., 4,258,949, Cl. 294-81.0SF.

Allied Tube & Conduit Corporation: *See—*
Goldberg, Harold D., 4,258,936, Cl. 285-31.000.

Alpha Patent Limited: *See—*
Hafeli, Robert, 4,259,447, Cl. 435-215.000.

Alps Electric Co., Ltd.: *See—*
Kondo, Shiro; and Kumagai, Masao, 4,259,559, Cl. 200-311.000.

Altherr, Russell G., to AMSTED Industries Incorporated. Articulated railway coupling. 4,258,628, Cl. 105-4.00R.

Aluminum Company of America: *See—*
Das, Subodh K.; and Coffman, Robert L., 4,259,161, Cl. 204-67.000.

ALZA Corporation: *See—*
Choi, Nam S., 4,259,102, Cl. 71-28.000.

Amada Company, Limited: *See—*
Tanabe, Hiromichi, 4,258,601, Cl. 83-820.000.

Amancharla, Amareswar, to Baker International Corporation. Subterranean well injection apparatus. 4,258,787, Cl. 166-120.000.

Amaral, Jose A. Construction blocks. 4,258,522, Cl. 52-591.000.

Ambardanishvili, Tristan S.; Dundua, Vakhtang J.; Kiknadze, Gennady I.; Kolomiitsev, Mikhail A.; Tsetskhladze, Teya V.; Gromov, Vladimir A.; and Bagdavadze, Nanuli V. Method for preparing neutron-activation detectors. 4,259,280, Cl. 264-101.000.

Ameling, Dieter C.: *See—*
Elsner, Emil A.; Ameling, Dieter C.; Assenmacher, Rolf; and Fuchs, Gerhard, 4,259,539, Cl. 13-32.000.

American Coldset Corporation: *See—*
Thompson, Charles M.; and Thompson, Charles T., 4,258,803, Cl. 175-233.000.

American Cyanamid Company: *See—*
De Lay, Roger L., 4,259,320, Cl. 424-118.000.
Hanifin, John W., Jr.; and Ridge, David N., 4,259,256, Cl. 260-465.00E.
Kazan, John; and Yu, Chen S., 4,259,521, Cl. 562-401.000.
Lang, Stanley A., Jr.; Lin, Yang-I; and Ridge, David N., 4,259,504, Cl. 548-262.000.
Luo, Tatao, 4,259,486, Cl. 544-173.000.
Shepherd, Robert G., 4,259,352, Cl. 424-316.000.
Tomcufcik, Andrew S.; and Wilkinson, Raymond G., 4,259,490, Cl. 544-369.000.

American Dental Association Health Foundation: *See—*
Najarian, George L.; and Sabri, Zaker I., 4,259,293, Cl. 422-109.000.

American Hospital Supply Corporation: *See—*
Fruitstone, Mitchell J.; Tilly, Michele M.; and Pixton, Betty G., 4,259,207, Cl. 252-408.000.

American Optical Corporation: *See—*
Cole, Henry B., 4,258,978, Cl. 350-96.250.

American Original Corporation, The: *See—*
Marvin, John, 4,259,179, Cl. 209-18.000.

AMP Incorporated: *See—*
Reynolds, Charles E.; and Swengel, Robert C., Jr., 4,258,973, Cl. 339-95.00R.

Ampco Foods Inc.: *See—*
Shatila, Mounir A., 4,259,051, Cl. 425-133.100.

AMSTED Industries Incorporated: *See—*
Altherr, Russell G., 4,258,628, Cl. 105-4.00R.

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Jorgensen, Iver; Veigert, Steen; and Andersen, Niels E., 4,259,038, Cl. 417-53.000.

Anderson, Curry. Moving toy. 4,258,500, Cl. 46-264.000.

Anderson, John E.: *See—*
Kallenberger, Robert H.; and Anderson, John E., 4,259,308, Cl. 423-449.000.

Anderson, Larry W., to Ethyl Corporation. Substantially pure cyclic phosphonitrilic chloride trimer. 4,259,305, Cl. 423-300.000.

Anderson, Phillip R.; Douglas, George R.; and Thompson, John H., to Westinghouse Electric Corp. Transducer assembly for self-calibration. 4,259,732, Cl. 367-13.000.

Anderson, Richard J., to Zoecon Corporation. Pesticidal esters of amino acids. 4,259,348, Cl. 424-304.000.

Anderson, Rodger O., to General Electric Company. Liquid cooled gas turbine buckets. 4,259,037, Cl. 416-96.00R.

Andersson, Gunnar; and Borgstrom, Gunnar, to ASEA Aktiebolag. Apparatus for application of a tape of insulating material in the longitudinal direction of a substantially rectangular electrical conductor. 4,259,141, Cl. 156-438.000.

Anderton, John J., to GTE Products Corporation. Dual cable and substrate connector. 4,258,975, Cl. 339-97.00P.

Ando, Tadahiko; Shibata, Takehiko; Hayase, Eiji; and Ikawa, Shukuko, to Rikagaku Kenkyusho. Process for preparation of deoxyribonucleases. 4,259,446, Cl. 435-199.000.

Ando, Tetsuo: *See—*
Sawayama, Takehiro; Ito, Ichizo; Aga, Toshio; and Ando, Tetsuo, 4,258,565, Cl. 73-141.00R.

Ando, Wataru; and Nakaoka, Ichiro, to K.K. Pollution Preventing Research Laboratory. Method for producing dibasic fatty acid using liquid nitrogen dioxide (N_2O_4) as reacting agent. 4,259,524, Cl. 562-526.000.

Andre Rubber Company Limited: *See—*
Davy, Patrick F., 4,258,938, Cl. 285-93.000.

Andreoni, Alessandro: *See—*
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,259,244, Cl. 260-346.220.

Andrews, Edward W.; Blake, James E.; and Lambert, Thomas W., to General Electric Company. Cursor generator for use in computerized tomography and other image display systems. 4,259,725, Cl. 364-521.000.

Angioletti, Attilio, to Industrie Pirelli S.p.A. Lock for window sashes and the like. 4,258,946, Cl. 292-144.000.

Anthony, Robert J.: *See—*
Flegel, Vernon; and Anthony, Robert J., 4,259,278, Cl. 264-81.000.

Aoki, Kanemasa, to Canon Kabushiki Kaisha. DC rotary machine. 4,259,604, Cl. 310-113.000.

Aono, Masami, to Tokico Ltd. Cylinder device. 4,258,614, Cl. 92-85.00R.

Aoyagi, Koshiki: *See—*
Saito, Isamu; Aoyagi, Koshiki; Okumura, Masatoshi; Banba, Masayoshi; and Shibahara, Naoki, 4,259,225, Cl. 260-31.80B.

Application des Gaz: *See—*
Scremin, Gerard A.; and Urbano, Nino F., 4,258,904, Cl. 251-339.000.

Aqua-Chem, Inc.: *See—*
McClure, Thomas W., 4,259,160, Cl. 203-1.000.

Arai, Hisaharu; Sato, Masami; and Kadowaki, Kunio, to Aisan Industry Co., Ltd. Carburetor for internal combustion engines. 4,258,685, Cl. 123-520.000.

Arai, Kiyotaka: *See—*
Suhara, Manabu; and Arai, Kiyotaka, 4,259,226, Cl. 260-33.40F.

Arai, Toshio; Inoue, Shunzo; Kuroda, Yasuo; Kasuya, Michio; Konishi, Motofumi; and Nakamura, Mitsuo, to Canon Kabushiki Kaisha. Photographic apparatus. 4,259,007, Cl. 355-27.000.

Argoudelis, Alexander D.; Brodasky, Thomas F.; and Reusser, Fritz, to Upjohn Company, The. Antibiotic acanthomycin and process for preparing. 4,259,450, Cl. 435-253.000.

Arisaka, Kunio; and Namioka, Kenta, to Copal Company Limited. Program type electric shutter provided with exposure warning indicating device. 4,258,990, Cl. 354-29.000.

Ariyoshi, Hiromi; and Mizuno, Tiaki, to Nippondenso Co., Ltd. Flasher apparatus for vehicles. 4,259,659, Cl. 340-73.000.

Arms, John T.: *See—*
Clark, William D. K.; Hull, Michael N.; and Arms, John T., 4,259,418, Cl. 429-111.000.

Armstrong Cork Company: *See—*
Rosenau, Clifford M., 4,259,633, Cl. 324-65.00R.

Armstrong, William W., to Pfizer Inc. Oxytetracycline compositions. 4,259,331, Cl. 424-227.000.

Arnold, Anthony F., to SES, Incorporated. Electroless plating process for glass or ceramic bodies and product. 4,259,409, Cl. 428-428.000.

Arnold, Dieter, to Integral Hydraulic & Co. Adjustable volume vane-type pump. 4,259,039, Cl. 417-220.000.

Artelt, Peter: *See—*
Laux, Walter; Hebel, Rudolf; Artelt, Peter; Esfeld, Gerhard; and Jacob, Arnold, 4,259,064, Cl. 432-222.000.

Arthur D. Little, Inc.: *See—*
Hidden, William P.; and McCullough, John E., 4,259,043, Cl. 418-55.000.

Asahi Glass Company Ltd.: *See—*
Suhara, Manabu; and Arai, Kiyotaka, 4,259,226, Cl. 260-33.40F.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Karikawa, Tohru; and Satoh, Mituo, 4,258,995, Cl. 354-153.000.
Tokutomi, Seijiro; Ogawa, Ryota; Ohishi, Michiro; Nakamura, Kazuo; Jyojiki, Masao; and Tachihara, Satoru, 4,258,989, Cl. 354-25.000.

Asai, Osamu: *See—*
Tamura, Kohki; Kahara, Toshiki; Horiba, Tatsuo; Ebato, Noboru; and Asai, Osamu, 4,259,415, Cl. 429-90.000.

Asano, Toshiaki: *See—*
Tateoka, Masamichi; Asano, Toshiaki; Minoura, Kazuo; and Minami, Setsuo, 4,259,004, Cl. 355-8.000.

ASEA Aktiebolag: *See—*
Andersson, Gunnar; and Borgstrom, Gunnar, 4,259,141, Cl. 156-438.000.
Flisberg, Gunnar; and Juhlin, Lars-Erik, 4,259,713, Cl. 363-35.000.
Persson, Erik; and Sundin, Johnny, 4,259,654, Cl. 336-84.00R.

Asselman, George A. A.; and van Mensvoort, Adrianus J., to U.S. Philips Corporation. Refrigerator. 4,258,554, Cl. 62-175.000.

Assenmacher, Rolf: *See—*
Elsner, Emil A.; Ameling, Dieter C.; Assenmacher, Rolf; and Fuchs, Gerhard, 4,259,539, Cl. 13-32.000.

Ataka, Toshiei: *See—*
Takematsu, Tetsuo; Segawa, Hirozo; Miura, Takamaro; Ataka, Toshiei; Chatani, Michio; and Nakamura, Akira, 4,259,489, Cl. 544-336.000.

Atchley, Frank W.; and Vorbeck, Donald W., to Atco Manufacturing Co., Inc. Flared valve housing body. 4,258,664, Cl. 119-72.500.

Atco Manufacturing Co., Inc.: *See—*
Atchley, Frank W.; and Vorbeck, Donald W., 4,258,664, Cl. 119-72.500.

Atec-Weiss KG: *See—*
Weiss, Hermann; and Stockhammer, Ernst, 4,258,583, Cl. 74-414.000.

Atlantic Richfield Company: *See—*
Stover, Dennis E., 4,258,954, Cl. 299-4.000.

ATO Chemie: *See—*
Marie, Gilbert, 4,259,208, Cl. 252-429.00B.

Atwell, George C.: *See—*
Campbell, Gordon D.; Alexander, Robert H.; and Atwell, George C., 4,258,798, Cl. 173-168.000.

Auborn, James M.: *See—*
Proud, Joseph M.; Auborn, James M.; and Bessett, R. A., 4,259,593, Cl. 307-117.000.

Audi NSU Auto Union Aktiengesellschaft: *See—*
Leitermann, Wulf, 4,258,679, Cl. 123-196.0AB.

Aughey, John L. Noise producing toy. 4,258,498, Cl. 46-178.000.

Aula, Howard A.: *See—*
Mauch, Jerry L.; and Aula, Howard A., 4,258,687, Cl. 123-570.000.

Aulich, Hubert; and Grabmaier, Josef, to Siemens Aktiengesellschaft. Double crucible system for the production of light conducting fibers. 4,259,100, Cl. 65-11.00W.

Aument, Patrick E.: *See—*
de la Burde, Roger Z.; Aument, Patrick E.; and Utsch, Francis V., 4,258,729, Cl. 131-140.00P.

Automatic Liquid Packaging, Inc.: *See—*
Weiler, Gerhard H.; and Nagel, Dieter H., 4,258,867, Cl. 222-507.000.

Autovox S.p.A.: *See—*
Pera, Vittorio, 4,259,701, Cl. 360-96.500.

Avco Everett Research Laboratory, Inc.: *See—*
Limpaecher, Rudolf, 4,258,753, Cl. 137-806.000.

Axelson, Sven-Inge, to Maskin AB Rapid. Method and apparatus for feeding a processing machine. 4,259,031, Cl. 406-21.000.

B. B. Greenberg Co.: *See—*
Danna, Louis J., 4,258,458, Cl. 29-10.000.

B. F. Goodrich Company, The: *See—*
Kroenke, William J., 4,259,491, Cl. 546-8.000.
Murphy, Walter T., 4,258,917, Cl. 273-65.0ED.

Babb, Raymond E., to Hanscom, Genevieve I., a part interest; Hanscom, Genevieve; Magnuson, Robert M.; and Thomson, Lois J., Trustees of the Estate of Roy M. Magnuson, part interest to each. Automatic calibration control for color grading apparatus. 4,259,020, Cl. 356-402.000.

Bagby, Thomas L.; Demeny, Gary L.; and Smead, Robert G., to Caterpillar Tractor Co. Electrostatic spray apparatus. 4,258,655, Cl. 118-635.000.

Bagdavadze, Nanuli V.: *See—*
Ambardanishvili, Tristan S.; Dundua, Vakhtang J.; Kiknadze, Gennady I.; Kolomiitsev, Mikhail A.; Tsetskhladze, Teya V.; Gromov, Vladimir A.; and Bagdavadze, Nanuli V., 4,259,280, Cl. 264-101.000.

Bailey, Cecil J.: *See—*
Kettlestrings, John S.; and Bailey, Cecil J., 4,258,493, Cl. 40-600.000.

Baize, Rene, to Sofiman, Societe Anonyme. Process of making protective gloves. 4,259,377, Cl. 427-346.000.

Baker, Arthur L. Wood burning stove. 4,258,693, Cl. 126-67.000.

Baker International Corporation: *See—*
Amancharla, Amareswar, 4,258,787, Cl. 166-120.000.

Baker, Stephen R.; Jamieson, William B.; and Ross, William J., to Lilly Industries Limited. Aurone derivatives. 4,259,340, Cl. 424-269.000.

Bakshi, Kiran R.; Marquis, David M.; and Paradis, Stephen G., to Chevron Research Company. Maleic anhydride production with recycle treatment. 4,259,246, Cl. 260-346.750.

Balasubramanian, P. S.; Bertin, Claude L.; and Greenspan, Stephen B., to International Business Machines Corporation. Fabrication method for forming FET gate electrode. 4,259,366, Cl. 427-88.000.

Balat, Roger; Illes, Joseph A.; Jacquemart, Jean-Francois V.; and Sarda, Christian, to Synthelabo. Endocavitary cardiac stimulation probe. 4,258,724, Cl. 128-785.000.

Balchunas, Charles A., to General Electric Company. Adjustable thermostat. 4,259,655, Cl. 337-361.000.

Balde, John W., to Western Electric Company, Inc. Forming vias through multilayer circuit boards. 4,258,468, Cl. 29-830.000.

Baldwin, John J., to Merck & Co., Inc. Substituted aminoalkoxypyridines, compositions and use thereof. 4,259,327, Cl. 424-248.570.

Baldwin, John J.; and Ponticello, Gerald S., to Merck & Co., Inc. Di- and tri-substituted thiazoles. 4,259,341, Cl. 424-270.000.

Bales, William T. Three dimensional topiary figure and method of making the same. 4,258,503, Cl. 47-58.000.

Ball Corporation: *See—*
Schiavone, Frank J., 4,259,670, Cl. 343-700.0MS.

Ballard, Thomas R.: *See—*
Louis, Paul R.; Sorensen, Eugene R.; and Ballard, Thomas R., 4,259,286, Cl. 264-555.000.

Ballentine, Robert H., to Boeing Company, The. Bi-directional tape applicator head and method. 4,259,144, Cl. 156-522.000.

Balsamo, Angelo: *See—*
Merlo, Armando M., 4,259,423, Cl. 430-30.000.

Bamberger, Carlos E.: *See—*
Richardson, Donald M., deceased; and Bamberger, Carlos E., 4,259,108, Cl. 75-117.000.

Ban, Thomas E.; and Rao, Ashok D., to Dravo Corporation. Pelletized fixed sulfur fuel. 4,259,085, Cl. 44-26.000.

Banba, Masayoshi: *See—*
Saito, Isamu; Aoyagi, Koshiki; Okumura, Masatoshi; Banba, Masayoshi; and Shibahara, Naoki, 4,259,225, Cl. 260-31.80B.

Bancsi, Joseph A.: *See—*
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Bandag Incorporated: *See—*
Higbee, Charles D., 4,258,755, Cl. 138-122.000.

Baptiste, Maurice, Sr. Vehicular brake system. 4,258,819, Cl. 180-287.000.

Barabas, Eugene S., to GAF Corporation. Bimodal coextendant suspension polymerization system. 4,259,465, Cl. 526-65.000.

Barkovich, Stephen J.: *See—*
Kadau, Dennis K.; and Barkovich, Stephen J., 4,259,111, Cl. 75-171.000.

Barneoud, Edouard R.; Guer, Michel; Lecouvreur, Paul; and Roumailhac, Jean, to Commissariat a l'Energie Atomique. Connecting device for an equipment unit suspended from a system which subjects said unit to differential movements of displacement. 4,258,937, Cl. 285-61.000.

Barnett, Bernard T. Cross bows. 4,258,689, Cl. 124-25.000.

Barre, Francoise: *See—*
Eranian, Armand; Dubois, Jean-Claude; Gazard, Maryse; and Barre, Francoise, 4,259,162, Cl. 204-159.160.

Barre, Marcel J. C. Scooper-excavator. 4,258,486, Cl. 37-190.000.

Barrus, Gordon B.; and Matula, Jerry, to Printronix, Inc. Print hammer mechanism having dual electromagnetic coils and pole pieces. 4,258,623, Cl. 101-93.040.

BASF Aktiengesellschaft: *See—*
Huchler, Otto H.; Mesch, Walter; Winderl, Siegfried; Mueller, Herbert; and Hoffmann, Herwig, 4,259,531, Cl. 568-617.000.
Krabetz, Richard; Herrmann, Walter; Scholz, Norbert; Engelbach, Heinz; Engert, Gerd-Juergen; Willersinn, Carl-Heinz; Duembgen, Gerd; and Thiessen, Fritz, 4,259,211, Cl. 252-443.000.
Kummer, Rudolf; Schneider, Heinz-Walter; and Weiss, Franz-Josef, 4,259,520, Cl. 560-204.000.
Platz, Rolf; Fuchs, Werner; Rieber, Norbert; Jung, Johann; and Wuerzer, Bruno, 4,259,235, Cl. 260-152.000.
Rudolf, Peter; Steck, Werner; Sarnecki, Wilhelm; and Jaeckh, Christof, 4,259,368, Cl. 427-130.000.

BASF Wyandotte Corporation: *See—*
Login, Robert B.; and Newkirk, David D., 4,259,222, Cl. 260-29.20E.
Login, Robert B., 4,259,457, Cl. 525-39.000.
Newkirk, David D.; and Thir, Basil, 4,259,405, Cl. 428-395.000.

Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladimir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K. Aircraft carrier take-off and landing system and method for using same. 4,259,658, Cl. 340-26.000.

Bates, Albert M.: *See—*
Junod, Michael T.; and Bates, Albert M., 4,259,744, Cl. 455-103.000.

Battalov, Edvard M.: *See—*
Nikitin, Jury E.; Murinov, Jury I.; Leplyanin, Gennady V.; Rafikov, Sagid R.; Bikchurina, Lilia K.; Tolstikov, Genrikh A.; Kazakov, Valery P.; Battalov, Edvard M.; Kolosnitsyn, Vladimir S.; Golodkova, Lyalya N.; Izmailov, Genrikh I.; and Markin, Gennady K., 4,259,229, Cl. 260-42.210.

Battelle-Institut e.V.: *See—*
Winter, Heinrich; and Merz, Dietrich, 4,259,270, Cl. 264-8.000.

Baudin, Pol: *See—*
Nolte, Hans-Henning; Baudin, Pol; and De Boel, Marcel, 4,259,273, Cl. 264-42.000.

Bauer, Dennis P., to Ethyl Corporation. Process for resolving D,L-leucine. 4,259,441, Cl. 435-23.000.

Bauer, Kurt; and Hagena, Detlef, to Bayer Aktiengesellschaft. 3-Methyl-5-keto-α,ω-alkenedioic acids and esters. 4,259,518, Cl. 560-176.000.

Baughman, Barbara A.: *See—*
Berke, Carl M.; and Baughman, Barbara A., 4,259,114, Cl. 106-1.280.

Baumgartl, Wilhelm; Funke, Hermann; Reiff, Ulrich; and Scheier, Franz, to Hoechst Aktiengesellschaft. Process for embossing polyvinylchloride sheets. 4,259,285, Cl. 264-284.000.

Baus, Heinz G., to Showerlux Canada Ltd. Shielding for damp rooms. 4,258,443, Cl. 4-557.000.

Bausch & Lomb Incorporated: *See—*
Keogh, Philip L.; Kunzler, Jay F.; and Niu, Gregory C. C., 4,259,467, Cl. 526-279.000.

Baxter Travenol Laboratories, Inc.: *See—*
DeFrank, Michael P.; and Bancsi, Joseph A., 4,259,187, Cl. 210-446.000.

Bayer Aktiengesellschaft: *See—*
Bauer, Kurt; and Hagena, Detlef, 4,259,518, Cl. 560-176.000.
Dunlap, Kenneth L.; and Knofel, Hartmut, 4,259,526, Cl. 564-331.000.
Grogler, Gerhard, 4,259,255, Cl. 260-456.00P.
Hamprecht, Rainer, 4,259,237, Cl. 260-206.000.
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Reitz, Gunther; Boehmke, Gunther; and Jakobs, Karlhans, 4,258,448, Cl. 8-582.000.
Scholl, Hans-Joachim, 4,259,511, Cl. 560-25.000.

Bayly, William I.: *See—*
Korzeb, Frank; and Bayly, William I., 4,259,060, Cl. 432-3.000.

BBC Brown, Boveri & Company, Limited: *See—*
Buser, Werner; and Hoitink, Hendrik, 4,259,636, Cl. 324-158.00D.
Karlen, Urs, 4,258,939, Cl. 285-137.00R.

Beam, Billy G. Batting practice stand. 4,258,916, Cl. 273-26.00R.

Bean, Maura M.: *See—*
Hanamoto, Max M.; and Bean, Maura M., 4,259,362, Cl. 426-622.000.

Beath, Laurence R.; and Mihelich, Walter G., to Price Company Limited, The. Process for making refiner mechanical pulp. 4,259,148, Cl. 162-24.000.

Beck, James R.; and Yahner, Joseph A., to Eli Lilly and Company. Control of phytopathogens using dinitroaniline compounds. 4,259,347, Cl. 424-304.000.

Bednyakov, Alexandr I.: *See*—
Vagin, Alexei A.; Kornev, Oleg J.; and Bednyakov, Alexandr I., 4,259,046, Cl. 425-8.000.

Beha, Bernhard: *See*—
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Beilfuss, Wolfgang: *See*—
Eggensperger, Heinz; Rehn, Dieter; Beilfuss, Wolfgang; and Nolte, Helmut, 4,259,383, Cl. 428-72.000.

Bekedam, Martin. Closed pressurized feed water system supplying flash steam to a lower pressure process. 4,258,668, Cl. 122-1.00R.

Belanger, Donald. Apparatus for delimbing trees. 4,258,762, Cl. 144-2.00Z.

Beldam, Richard P., to Borg-Warner Corporation. Heat exchanger interplate fitting. 4,258,785, Cl. 165-175.000.

Bell, Judith A., to Hand Rehabilitation Foundation. Dual operated lateral thumb hand prosthesis. 4,258,441, Cl. 3-12.600.

Bell Laboratories: *See*—
Dragone, Corrado; and Gans, Michael J., 4,259,674, Cl. 343-909.000.

Bell, Louis G.: *See*—
Lippmann, Irwin; Popli, Shankar D.; Miller, Larry G.; and Bell, Louis G., 4,259,315, Cl. 424-37.000.

Bell Telephone Laboratories, Incorporated: *See*—
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Derby, Jeffrey H., 4,259,642, Cl. 330-288.000.
Farrow, Cecil W., 4,259,648, Cl. 332-9.00R.
Geary, John M.; and Mattes, Hans G., 4,259,728, Cl. 365-45.000.
Lepselter, Martin P.; and Sze, Simon M., 4,259,680, Cl. 357-35.000.
Sabia, Raffaele A., 4,259,540, Cl. 174-23.00C.

Bellora, Elio: *See*—
Donetti, Arturo; Cereda, Enzo; and Bellora, Elio, 4,259,253, Cl. 260-418.000.

Bellows, Richard J.; and Grimes, Patrick G., to Exxon Research and Engineering Co. Ionic barrier. 4,259,417, Cl. 429-101.000.

Belveal, Robert E., to Houston Systems Manufacturing Co. Waste treatment apparatus. 4,259,182, Cl. 210-629.000.

Belvedere Company, Inc.: *See*—
Cowen, Theodore A., Jr.; and McCartan, Thomas F., 4,258,964, Cl. 312-224.000.

Bendix Corporation, The: *See*—
Bourdon, Normand C.; and Gould, Donald H., 4,258,970, Cl. 339-38.000.
Mayer, Endre A., 4,258,749, Cl. 137-596.170.
Schira, John J., 4,258,684, Cl. 123-416.000.

Bendix Westinghouse Limited: *See*—
Knight, David J.; and Lippiatt, Sidney A., 4,258,959, Cl. 303-7.000.

Benedikter, Lothar; Kobinger, Walter; Pichler, Ludwig; Ihrig, Hanns; and Griss, Gerhart, to Boehringer Ingelheim GmbH. Antianginal treatment with azepine derivatives. 4,259,342, Cl. 424-270.000.

Beni, Gerardo; Dautremont-Smith, William C.; Schiavone, Lawrence M.; and Shay, Joseph L., to Bell Telephone Laboratories, Incorporated. Iridium oxide based electrochromic devices. 4,258,984, Cl. 350-357.000.

Benkmann, Christian, to Linde Aktiengesellschaft. Adiabatic adsorption method for gas purification or separation. 4,259,091, Cl. 55-25.000.

Benner, Timothy E.: *See*—
Month, Alfred; and Benner, Timothy E., 4,259,609, Cl. 313-372.000.

Bennett, John T., Jr. Rehydrator. 4,258,761, Cl. 141-242.000.

Beregi, Laszlo; Hugon, Pierre; Bure, Jacques; and Degrand, Francoise, to Science Union et Cie, Societe Francaise de Recherche Medicale. 1-Methyl-4-piperidinol esters of 4-quinolinylamino benzoates and antiinflammatory and analgesic compositions and methods employing them. 4,259,335, Cl. 424-258.000.

Berezhnoi, Igor A.: *See*—
Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladimir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K., 4,259,658, Cl. 340-26.000.

Bergfeld, Manfred: *See*—
Zengel, Hans-Georg; and Bergfeld, Manfred, 4,259,258, Cl. 260-543.00A.

Bergman, Carl P. Dispenser actuating chuck adapter. 4,258,866, Cl. 222-333.000.

Bergman, Helmut. Space enclosing structure. 4,258,513, Cl. 52-81.000.

Bergwerksverband GmbH: *See*—
Romey, Ingo; and El-Roy, Menachem, 4,259,473, Cl. 528-138.000.

Berke, Carl M.; and Baughman, Barbara A., to Polaroid Corporation. Method for forming silver precipitating nuclei. 4,259,114, Cl. 106-1.280.

Bernard Wolnak and Associates, Inc.: *See*—
Danehy, James P., 4,259,443, Cl. 435-137.000.

Bernasconi, Raymond: *See*—
Paioni, Romeo; Schilling, Walter; and Bernasconi, Raymond, 4,259,338, Cl. 424-267.000.

Berney, Jean-Claude, to Jean-Claude Berney SA. Electronic timepiece. 4,259,736, Cl. 368-62.000.

Berney, Jean-Claude, to Jean-Claude Berney SA. Electronic watch. 4,259,737, Cl. 368-66.000.

Berteaud, Andre-Jean: *See*—
Roussy, Georges; Berteaud, Andre-Jean; and Thiebaut, Jean-Marie, 4,259,561, Cl. 219-10.55A.

Bertin, Claude L.: *See*—
Balasubramanian, P. S.; Bertin, Claude L.; and Greenspan, Stephen B., 4,259,366, Cl. 427-88.000.

Bessett, R. A.: *See*—
Proud, Joseph M.; Auborn, James M.; and Bessett, R. A., 4,259,593, Cl. 307-117.000.

Bessin, Pierre: *See*—
Laforest, Jacqueline; Bonnet, Jacqueline; and Bessin, Pierre, 4,259,509, Cl. 549-77.000.

Bestobell Mobrey Limited: *See*—
Denbow, Nicholas J., 4,258,736, Cl. 137-2.000.

BFG Glassgroup: *See*—
Kulla, Josef, 4,259,135, Cl. 156-293.000.
Nolte, Hans-Henning; Baudin, Pol; and De Boel, Marcel, 4,259,273, Cl. 264-42.000.

Bianchi, Raymond A.; and Heathcoat, Sally L., to Caterpillar Tractor Co. Method of painting. 4,259,374, Cl. 427-282.000.

Bidwell, Robert E.: *See*—
Kurtz, Leonard D.; and Bidwell, Robert E., 4,258,824, Cl. 181-233.000.

Bikchurina, Lilia K.: *See*—
Nikitin, Jury E.; Murinov, Jury I.; Leplyanin, Gennady V.; Rafikov, Sagid R.; Bikchurina, Lilia K.; Tolstikov, Genrikh A.; Kazakov, Valery P.; Battalov, Edvard M.; Kolosnitsyn, Vladimir S.; Golodkova, Lyalya N.; Izmailov, Genrikh I.; and Markin, Gennady K., 4,259,229, Cl. 260-42.210.

Binderup, Ernst T., to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab). Cephalosporines. 4,259,333, Cl. 424-246.000.

Bio-Dynamics, Inc.: *See*—
Fudge, David C., 4,258,940, Cl. 285-137.00R.

Bio-Rad Laboratories, Inc.: *See*—
Curry, Robert E.; Simonsen, Michael G.; and Schwartz, Eric D., 4,259,289, Cl. 422-64.000.

BioResearch Inc.: *See*—
Kurtz, Leonard D.; and Bidwell, Robert E., 4,258,824, Cl. 181-233.000.

Biphase Energy Systems: *See*—
Ritzi, Emil W., 4,258,551, Cl. 60-654.000.

Birkett, Earl. Rotating object imprinting device with relatively sliding plate. 4,258,621, Cl. 101-40.000.

Bisbing, Robert H.; and Frame, William R., to Southco, Inc. Tamper-resistant fastener. 4,258,596, Cl. 81-436.000.

Bisera, Jose; Carrington, James H.; and Weil, Max H., to Institute of Critical Care Medicine. Vascular interface. 4,258,717, Cl. 128-637.000.

Bishop, Keith C., III, to Chevron Research Company. High copper level comulled and impregnated sulfur sorbent. 4,259,213, Cl. 252-463.000.

Bittner, Friedrich: *See*—
Hentschel, Klaus; and Bittner, Friedrich, 4,259,487, Cl. 544-218.000.

Black, William L. Ball-actuated tubular projectile. 4,258,625, Cl. 102-92.100.

Blake, James E.: *See*—
Andrews, Edward W.; Blake, James E.; and Lambert, Thomas W., 4,259,725, Cl. 364-521.000.

Blankenship, John E.; and Hoback, Roy W., to United States of America, Navy. Hermetically sealed high pressure gas container. 4,258,739, Cl. 137-71.000.

Blanton, William A.; and Flanders, Robert L., to Chevron Research Company. Restricting silica content of catalyst inventory to prevent alumina poisoning for SO_x control. 4,259,176, Cl. 208-120.000.

Blessing, Hubert, to Levi Strauss & Co. Method and apparatus for fusing strips. 4,259,131, Cl. 156-201.000.

Bloom, Stanley M.; Borror, Alan L.; and Foley, James W., to Polaroid Corporation. Process for preparing benzisothiazole-1,1-dioxide and naphtho-1,2-thiazine-1,1-dioxide compounds. 4,259,498, Cl. 548-207.000.

Bloomfield, Edward J.; and Penman, Frederick S., to Ransome Hoffmann Pollard Limited. Mechanical assemblies employing sensing means for sensing motion or position. 4,259,637, Cl. 324-166.000.

Bloxham, Wayne N., to Selectra-Trac, Inc. Selective control of fluid to brakes. 4,258,958, Cl. 303-6.00A.

Blum, Alvin S. Method and apparatus for electrical separation of molecules. 4,259,079, Cl. 23-230.00R.

Blum, Jean. New derivatives of cysteine. 4,259,508, Cl. 549-72.000.

Boehmke, Gunther: *See*—
Reitz, Gunther; Boehmke, Gunther; and Jakobs, Karlhans, 4,258,448, Cl. 8-582.000.

Boehringer Ingelheim GmbH: *See*—
Benedikter, Lothar; Kobinger, Walter; Pichler, Ludwig; Ihrig, Hanns; and Griss, Gerhart, 4,259,342, Cl. 424-270.000.
Engel, Wolfhard; Trummlitz, Gunter; Seeger, Ernst; Haarmann, Walter; Engelhardt, Gunther; and Zimmermann, Rainer, 4,259,336, Cl. 424-246.000.

Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; Pichler, Ludwig; Hoefke, Wolfgang; and Gaida, Wolfram, 4,259,346, Cl. 424-273.00R.

Boeing Company, The: *See—*
Ballentine, Robert H., 4,259,144, Cl. 156-522.000.
Ganz, Ulrich W.; and Topness, Paul C., 4,258,823, Cl. 181-214.000.
Hunt, James, 4,258,889, Cl. 244-207.000.
Olbrechts, Guy R., 4,258,579, Cl. 74-5.370.
Perry, Clifford R.; and Dietz, Lloyd H., 4,258,784, Cl. 165-166.000.

Boeing, Joseph; and Mueller, Hermann A., to Rohm GmbH. Gel filtration column. 4,259,186, Cl. 210-198.200.

Boetes, Reinder; and Sukhov, Boris P. Water current meter. 4,258,568, Cl. 73-170.00A.

Boettcher, William C., to D.O.V.E. Equipment Corporation. Vending machine with adjustable divider in helical conveyor. 4,258,860, Cl. 221-75.000.

Boeuf, Jean-Marie; Gerest, Pierre; and Lemaire, Henri, to Aimants Ugimag S.A. Process of preparing ferrite powders. 4,259,197, Cl. 252-62.580.

Bogushev, Zimel A.: *See—*
Spirin, Evgeny T.; Shakhov, Vladimir V.; Vagin, Viktor V.; Vainzof, Kaletta M.; and Bogushev, Zimel A., 4,259,063, Cl. 432-124.000.

Boisclair, William F., to Tubill Enterprises, Inc. Taxicab robbery alerting system. 4,259,664, Cl. 340-539.000.

Boise Cascade Corporation: *See—*
Westphal, Teddy M., 4,258,859, Cl. 220-270.000.

Boiten, Ebbe; and de Vries, Jochem J., to U.S. Philips Corporation. Shaving apparatus. 4,258,470, Cl. 30-43.600.

Bolliand, Robert, to Rhone-Poulenc-Textile. Fibrous padding material and process for its manufacture. 4,259,400, Cl. 428-288.000.

Bollingen, Pietro; and Krieger, Manfred, to Sandoz Ltd. Organic compounds. 4,259,523, Cl. 562-500.000.

Bollinger, Joseph M.: *See—*
Machleder, Warren H.; and Bollinger, Joseph M., 4,259,086, Cl. 44-58.000.

Bonalumi, Pietro, to Rockwell-Rimoldi, S.p.A. Workpiece advancing apparatus for sewing machines. 4,258,639, Cl. 112-322.000.

Bonner, Edgar L.; and Faerber, Nelson A. Television advertising editing system. 4,259,689, Cl. 358-165.000.

Bonnet, Jacqueline: *See—*
Laforest, Jacqueline; Bonnet, Jacqueline; and Bessin, Pierre, 4,259,509, Cl. 549-77.000.

Boots Hercules Agrochemicals Co.: *See—*
Diveley, William R., 4,259,260, Cl. 564-459.000.

Borcoman, Mircea. Multi-purpose installation for the manufacture of small and medium products of reinforced and unreinforced concrete. 4,259,050, Cl. 425-88.000.

Borg-Warner Corporation: *See—*
Albertson, Clarence E.; Nichols, George M.; and Rasmussen, John N., 4,258,783, Cl. 165-133.000.
Beldam, Richard P., 4,258,785, Cl. 165-175.000.

Borgstrom, Gunnar: *See—*
Andersson, Gunnar; and Borgstrom, Gunnar, 4,259,141, Cl. 156-438.000.

Borque, George O. Cross arm yard sign support. 4,258,494, Cl. 40-607.000.

Borrelli, Nicholas F., to Corning Glass Works. Method for producing selectively tinted photochromic glass lens and products. 4,259,406, Cl. 428-410.000.

Borror, Alan L.: *See—*
Bloom, Stanley M.; Borror, Alan L.; and Foley, James W., 4,259,498, Cl. 548-207.000.

Bouche, Raymond R. Vibration damper for overhead electrical cables. 4,259,541, Cl. 174-42.000.

Boudreau, Ronald B., to Digital Equipment Corporation. Integral pivot and lock apparatus for slide rack mounted boxes. 4,258,967, Cl. 312-322.000.

Bourdon, Normand C.; and Gould, Donald H., to Bendix Corporation, The. Electrical cable and molded protection cap assembly. 4,258,970, Cl. 339-38.000.

Bovenkerk, Harold P., to General Electric Company. Method of making diamond compacts for rock drilling. 4,259,090, Cl. 51-309.000.

Bowden, Humphrey G.: *See—*
Cole, William L.; Stott, Geoffrey; and Bowden, Humphrey G., 4,259,126, Cl. 148-12.00E.

Boxus, Louis: *See—*
della Faille d'huysse, Gaetan; Clausse, Jacques; and Boxus, Louis, 4,259,640, Cl. 324-439.000.

Boyle, William J., Jr.: *See—*
Sifniades, Stylianos; Lahav, Meir; and Boyle, William J., Jr., 4,259,239, Cl. 260-239.30R.

Brabander, Joseph. Post-stake driver. 4,258,905, Cl. 254-29.00R.

Bradley, Robert L.: *See—*
Tehan, James F.; and Bradley, Robert L., 4,259,542, Cl. 174-48.000.

Bradley, Robert W., to Bush Universal, Inc. Stiffener for shoes or the like. 4,258,449, Cl. 12-146.00S.

Bramson, Mogens L.: *See—*
McCue, John P.; and Bramson, Mogens L., 4,258,723, Cl. 128-767.000.

Brandenburg, Lee H.: *See—*
Delk, Charles W.; Brandenburg, Lee H.; and Parish, Edwin J., 4,258,512, Cl. 52-79.700.

Brandenstein, Manfred: *See—*
Kunkel, Heinrich; Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Ernst, Horst M., 4,258,806, Cl. 175-370.000.

Brandon, Ronald E.; and Winger, James W. Vehicle spray reduction. 4,258,929, Cl. 280-154.50R.

Brandt, Israel M.; and Scearce, Forrest A., to NL Industries, Inc. Thermal insulation method. 4,258,791, Cl. 166-302.000.

Brasseler: *See—*
Lustig, Leopold P., 4,259,069, Cl. 433-144.000.

Braun Aktiengesellschaft: *See—*
Franke, Wolfgang, 4,259,702, Cl. 360-96.500.

Brecht, Frederick R. Indicia bearing plastic laminate and method of producing same. 4,259,391, Cl. 428-195.000.

Breingan, Ian M.: *See—*
Jones, William F.; and Breingan, Ian M., 4,258,809, Cl. 177-1.000.

Bremshey AG: *See—*
Klose, Odo, 4,258,827, Cl. 182-33.300.

Brentham, Jerry D. Forearm exerciser. 4,258,913, Cl. 272-67.000.

Bridger, Robert F., to Mobil Oil Corporation. Method of preparing lubricant additives. 4,259,254, Cl. 260-429.00R.

Bridgestone Tire Company Limited: *See—*
Makino, Shigeo; Watanabe, Shigeo; and Sogi, Toshiyuki, 4,258,769, Cl. 152-209.00R.
Mori, Osamu; Yoshizawa, Takanao; and Samata, Kozo, 4,258,516, Cl. 52-126.000.
Nakayama, Osamu, 4,258,691, Cl. 152-209.00R.
Samoto, Masao, 4,258,775, Cl. 152-361.00R.
Tanaka, Mamoru; and Saito, Hideaki, 4,259,553, Cl. 200-81.00R.
Wakamiya, Masatoshi, 4,258,641, Cl. 114-219.000.
Yukuta, Toshio; Yagura, Kazuo; and Fuchigami, Nobuhisa, 4,259,452, Cl. 521-52.000.

Brighton, John A.: *See—*
Schnall, Ira H.; and Brighton, John A., 4,258,750, Cl. 137-625.300.

Brittain, Austin: *See—*
Thawley, Clive S.; Graham, Kenneth; and Brittain, Austin, 4,259,002, Cl. 354-319.000.

Britton, Arthur; Smith, John C.; Davis, Roger I.; and Page, John A. Application of liquid material to webs. 4,259,379, Cl. 427-356.000.

Brodasky, Thomas F.: *See—*
Argoudelis, Alexander D.; Brodasky, Thomas F.; and Reusser, Fritz, 4,259,450, Cl. 435-253.000.

Broer, Dirk J.; and van den Broek, Arnoldus J. M., to U.S. Philips Corporation. Additive method of manufacturing metal patterns on synthetic resin substrates. 4,259,435, Cl. 430-313.000.

Brothers, Charles E.: *See—*
Slager, James E.; and Brothers, Charles E., 4,259,243, Cl. 260-343.600.

Brown, Bruce M., to Calvert, Lawrence C., II; and Kiltz, Richard C. Seed sprouting apparatus and method. 4,258,501, Cl. 47-16.000.

Brown, F. Barton, to Kobe, Inc. High flow standing valve. 4,259,041, Cl. 417-559.000.

Brown, John E. Stackable collapsible shipping rack. 4,258,631, Cl. 108-91.000.

Brown, John L. In-line snubber for use with braided cordage. 4,258,608, Cl. 87-6.000.

Brown & Williamson Tobacco Corporation: *See—*
Cogbill, Philip H., II, 4,258,728, Cl. 131-137.000.

Browne, Tom M.: *See—*
Sellge, Hans, Jr.; and Browne, Tom M., 4,258,915, Cl. 272-111.000.

Brunnee, Curt; Franzen, Jochen; and Meier, Stefan. Ionization of organic substances on conveyor means in mass spectrometer. 4,259,572, Cl. 250-281.000.

Brunninger, Manfred: *See—*
Theurer, Josef; and Brunninger, Manfred, 4,258,626, Cl. 104-6.000.

Bryant, Charles B. Aquatic harvesting apparatus. 4,258,534, Cl. 56-9.000.

Buchner, Klaus; and Haerten, Rainer, to Siemens Aktiengesellschaft. Ultrasonic imaging apparatus operating according to the impulse-echo method. 4,258,575, Cl. 73-626.000.

Buchy, Francois; and Cadier, Jacques, to Thomson-CSF. Self-regulated device for temperature stabilization of at least one connection point, and temperature-controlled plug-in connector for the use of said device. 4,258,569, Cl. 73-343.00R.

Buckley, Bruce S., to Chevron Research Company. Solar collector panel. 4,258,701, Cl. 126-434.000.

Buckley, Robert D. Golfer's sighting device. 4,258,475, Cl. 33-283.000.

Bugaut, Andree; and Vandenbossche, Jean-Jacques, to L'Oreal. Metaphenylenediamines. 4,259,261, Cl. 564-99.000.

Bugianesi, Robert L.: *See—*
Ponpipom, Mitree M.; Shen, Tsung-Ying; and Bugianesi, Robert L., 4,259,324, Cl. 424-180.000.

Buhler, Kurt K.: *See—*
Glaser, Fritz; Gortz, Christoph; Buhler, Kurt K.; Klimmer, Josef W.; Laberheim, Rene; Pauli, Klaus H.; and Velten, Werner, 4,258,726, Cl. 130-27.00L.

Bull, Michael J., to Shell Oil Company. Halobenzyl ester pesticides. 4,259,349, Cl. 424-305.000.

Bundy, Gordon L., to Upjohn Company, The. 11a-Homo-PG intermediates for preparing 11a-methano TXA_2 compounds. 4,259,250, Cl. 260-408.000.

Bundy, Gordon L., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-9-deoxy-9-methylene-5,6-didehydro-PGF_1 compounds. 4,259,535, Cl. 568-838.000.

Bundy, Kenneth: *See—*
Flack, Frederick C.; Ellis, Richard E.; Bundy, Kenneth; Miners, Francis; and Selley, Wilfred G., 4,258,709, Cl. 128-136.000.

Bunnelle, William L.; and Lindmark, Richard C., Jr., to H. B. Fuller Company. Hot melt adhesive for elastic banding. 4,259,220, Cl. 260-27.0BB.

Burdess, James S.: *See—*
Fox, Colin H. J.; and Burdess, James S., 4,258,577, Cl. 74-5.60R.

Bure, Jacques: *See—*
Beregi, Laszlo; Hugon, Pierre; Bure, Jacques; and Degrand, Francoise, 4,259,335, Cl. 424-258.000.

Buriks, Rudolf S.; Fauke, Allen R.; and Munch, John H., to Petrolite Corporation. Cyclic phenol-aldehyde resins. 4,259,464, Cl. 525-480.000.

Burlington Industries, Inc.: *See—*
Hill, Berlie R., 4,259,399, Cl. 428-288.000.

Burmeister, Dennis N., to Outboard Marine Corporation. Marine propulsion device including an improved shift control rod. 4,258,642, Cl. 440-53.000.

Burns, Richard C.; and Packard, Thomas N. Electronic switching system for reducing noise transients. 4,259,742, Cl. 455-52.000.

Burow, Kenneth W., Jr.; and Eizember, Richard F., to Eli Lilly and Company. Method for preparing 3-amino-5-(t-butyl)isoxazole. 4,259,501, Cl. 548-246.000.

Burroughs Corporation: *See—*
Todd, Robert, 4,259,661, Cl. 340-146.3AQ.

Busch & Muller: *See—*
Niggemann, Fritz, 4,258,894, Cl. 248-483.000.

Buser, Werner; and Hoitink, Hendrik, to BBC Brown, Boveri & Company, Limited. Monitoring device for semiconductor rectifiers. 4,259,636, Cl. 324-158.00D.

Bush Universal, Inc.: *See—*
Bradley, Robert W., 4,258,449, Cl. 12-146.00S.

Butternut Electronics: *See—*
Newcomb, Donald R., 4,259,672, Cl. 343-722.000.

Buzio, Pierpaolo; and Edefonti, Lucio, to Societa' Italiana Resine S.I.R. S.p.A. Flexible double-layer polypropylene laminates. 4,259,412, Cl. 428-516.000.

Buzzell, Harold O., to Polaroid Corporation. Apparatus for preparing a gradient dyed sheet. 4,258,653, Cl. 118-419.000.

C. A. Weidmuller KG: *See—*
Strate, Klaus, 4,258,972, Cl. 339-59.00R.

C. Keller G.m.b.H. u. Co. KG: *See—*
Keck, Dieter, 4,258,599, Cl. 183-112.000.

C. L. Frost & Son, Inc.: *See—*
Gurney, Gerald W.; and Weis, Siegfried K., 4,258,841, Cl. 198-687.000.

Cabot Corporation: *See—*
Leon, Gonzalo S.; and Fortier, Richard C., 4,259,181, Cl. 209-231.000.

Cadier, Jacques: *See—*
Buchy, Francois; and Cadier, Jacques, 4,258,569, Cl. 73-343.00R.

Cadotte, John E., to Midwest Research Institute. Reverse osmosis membrane. 4,259,183, Cl. 210-654.000.

Calgon Corporation: *See—*
Windhager, Robert H.; and Hwang, Mei H., 4,259,411, Cl. 428-511.000.

California Institute of Technology: *See—*
Rembaum, Alan; Gupta, Amitava; and Volksen, Willi, 4,259,223, Cl. 260-29.60H.

Calvert, Lawrence C., II: *See—*
Brown, Bruce M., 4,258,501, Cl. 47-16.000.

Camboni, Vittorio: *See—*
Passoni, Raffaele; and Camboni, Vittorio, 4,259,332, Cl. 424-230.000.

Cammann, Fred W.; and Roach, Jere H., to Cammann Manufacturing Company, Inc. Portable disintegrator. 4,259,562, Cl. 219-68.000.

Cammann Manufacturing Company, Inc.: *See—*
Cammann, Fred W.; and Roach, Jere H., 4,259,562, Cl. 219-68.000.

Campbell, Carl M., to Interbank Card Association. Security system for electronic funds transfer system. 4,259,720, Cl. 364-200.000.

Campbell, Gordon D.; Alexander, Robert H.; and Atwell, George C., to Rockwell International Corporation. Air passages for pneumatic tools. 4,258,798, Cl. 173-168.000.

Campo, Edgar A., to Du Pont de Nemours, E. I., and Company. Interleaved rolls of web material. 4,258,846, Cl. 206-412.000.

Canavello, Benjamin J.; and Hatzakis, Michael, to International Business Machines Corporation. Image hardening process. 4,259,369, Cl. 427-155.000.

Canevari, Cesare; and Tarantola, Luciano, to Industrie Pirelli S.p.A. Metal cord. 4,258,543, Cl. 57-212.000.

Canon Kabushiki Kaisha: *See—*
Aoki, Kanemasa, 4,259,604, Cl. 310-113.000.
Arai, Toshio; Inoue, Shunzo; Kuroda, Yasuo; Kasuya, Michio; Konishi, Motofumi; and Nakamura, Mitsuo, 4,259,007, Cl. 355-27.000.
Endo, Ichiro; Kobayashi, Hajime; Komatsu, Toshiyuki; and Ohno, Shigeru, 4,259,424, Cl. 430-48.000.
Fukahori, Hidehiko; Iwashita, Tomonori; and Mashimo, Yukio, 4,258,997, Cl. 354-173.000.
Hasegawa, Tetsuo; Kato, Shigeo; and Nishikawa, Yoshihiro, 4,259,426, Cl. 430-98.000.
Mochizuki, Noritaka, 4,259,711, Cl. 362-304.000.
Tateoka, Masamichi; Asano, Toshiaki; Minoura, Kazuo; and Minami, Setsuo, 4,259,004, Cl. 355-8.000.
Tokuhara, Mitsuhiro; Sueda, Tetsuo; Tanaka, Kazuo; and Hirose, Ryusho, 4,259,688, Cl. 358-107.000.
Tsuneda, Terukuni, 4,259,428, Cl. 430-115.000.
Yoshida, Shigeru, 4,259,699, Cl. 360-88.000.

Cantini, Alfredo, to Gori & Zucchi S.p.A. Machine for automatically preparing and introducing closure sliders inside annular hollow members for producing annular spring safety catches for necklaces, bracelets and the like. 4,258,459, Cl. 29-33.00J.

Capuano, Terry D.: *See—*
Pamer, Walter R.; and Capuano, Terry D., 4,258,768, Cl. 152-176.000.

Cardiac Pacemakers, Inc.: *See—*
Feiman, Vladimir; and Luksha, Eugene, 4,259,420, Cl. 429-196.000.

Carl Freudenberg, Firma: *See—*
Fahrbach, Erich; Graber, Adolf; Knoke, Jurgen; Schweizer, Helmer; and Tecl, Bohuslav, 4,259,390, Cl. 428-195.000.

Carl Still GmbH & Co. KG, Firma: *See—*
Hohler, Dieter, 4,259,159, Cl. 202-269.000.
Lorenz, Kurt; Dungs, Horst; Koenigs, Hans B.; and Kurtz, Roman, 4,259,157, Cl. 201-39.000.
Weber, Heinrich; Lorenz, Kurt; Dungs, Horst; Kurtz, Roman; and Kersting, Hans-Joachim, 4,259,158, Cl. 202-121.000.

Carlsen, George D.: *See—*
Crumm, John C.; and Carlsen, George D., 4,259,011, Cl. 356-30.000.

Carow, Donald W. Linearized detector/rectifier circuit. 4,259,641, Cl. 329-101.000.

Carpenter Technology Corporation: *See—*
Taglang, Richard J.; and Ziolkowski, Walter C., 4,259,413, Cl. 428-548.000.

Carr, Timothy W.; and Froot, Howard A., to International Business Machines Corporation. Microanalysis by pulse laser emission spectroscopy. 4,259,574, Cl. 250-302.000.

Carrico, Robert J.; and Ngo, That T., to Miles Laboratories, Inc. Flavin adenine dinucleotide-labeled protein and polypeptide conjugates. 4,259,232, Cl. 260-112.00R.

Carrico, Robert J.; and Ngo, That T., to Miles Laboratories, Inc. β-Galactosyl-umbelliferone-labeled protein and polypeptide conjugates. 4,259,233, Cl. 260-112.00B.

Carrier Corporation: *See—*
Kelly, James B.; and Wilson, David S., 4,258,553, Cl. 62-117.000.
White, Thomas M., 4,258,877, Cl. 236-49.000.

Carrington, James H.: *See—*
Bisera, Jose; Carrington, James H.; and Weil, Max H., 4,258,717, Cl. 128-637.000.

Carroll, Charles B.: *See—*
Christiano, Victor; and Carroll, Charles B., 4,259,612, Cl. 313-422.000.

Carter, John R. Flexible foot extender. 4,258,910, Cl. 272-1.00R.

Caterpillar Tractor Co.: *See—*
Bagby, Thomas L.; Demeny, Gary L.; and Smead, Robert G., 4,258,655, Cl. 118-635.000.
Bianchi, Raymond A.; and Heathcoat, Sally L., 4,259,374, Cl. 427-282.000.
Gebhart, Daniel E.; Smith, Brace C.; Young, D. Craig; and Damerell, Jerry A., 4,258,544, Cl. 60-39.320.
Gill, Stephen H.; and Hogg, Theodore B., 4,258,853, Cl. 212-264.000.
Lindquist, John F., 4,258,463, Cl. 29-434.000.

Cather, Douglas A., Jr., to Garlock Inc. Shaft seal with retractable polytetrafluoroethylene-lined sealing lip. 4,258,927, Cl. 277-152.000.

Caughey, Robert A., to Forest Fuels, Inc. Dryer for particulate material. 4,258,476, Cl. 34-174.000.

Celanese Corporation: *See—*
Schwan, Frank J., 4,259,382, Cl. 428-36.000.

Central Sprinkler Corporation: *See—*
Hansen, Arne H., 4,258,795, Cl. 169-19.000.

Centre Electronique Horloger S.A.: *See—*
Fellrath, Jean; and Vittoz, Eric, 4,259,600, Cl. 307-270.000.

Cereda, Enzo: *See—*
Donetti, Arturo; Cereda, Enzo; and Bellora, Elio, 4,259,253, Cl. 260-418.000.

Ceserani, Roberto: *See—*
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,259,244, Cl. 260-346.220.

Chahroudi, Day; and Wellesley-Miller, Sean R., to Southwall Corporation, The. Methods, apparatus, and compositions for storing heat for the heating and cooling of buildings. 4,259,401, Cl. 428-306.000.

Chakrabarti, Paritosh M.; Wood, Lindley S.; and Tracy, David J., to GAF Corporation. Sulfur-containing polyoxyalkylenes. 4,259,474, Cl. 528-388.000.

Chakrabarty, Ananda M., to General Electric Company. Microorganisms having multiple compatible degradative energy-generating plasmids and preparation thereof. 4,259,444, Cl. 435-172.000.

Champion International Corporation: *See—*
Mode, Duane; and Dutcher, Daniel P., 4,258,881, Cl. 229-34.0HW.
Webinger, George P.; and Adamek, David, 4,258,874, Cl. 229-23.0BT.

Chan, Hak-Foon: *See—*
Miller, George A.; and Chan, Hak-Foon, 4,259,339, Cl. 424-269.000.

Chandler, John E.: *See—*
Johnson, Burnett H.; Chandler, John E.; and Lenz, Robert W., 4,259,475, Cl. 528-397.000.

Chang, Yu-Wen; and Ngan, Yiu C., to United States of America, Army. Millimeter wave image guide integrated oscillator. 4,259,647, Cl. 331-96.000.

Charles D. Burnes Co., Inc.: *See*—
Maguire, Frederick J., 4,258,489, Cl. 40-152.100.

Charm, Richard W.: *See*—
Nuzzi, Francis J.; Leech, Edward J.; Charm, Richard W.; and Polichette, Joseph, 4,259,113, Cl. 106-1.110.

Chatani, Michio: *See*—
Takematsu, Tetsuo; Segawa, Hirozo; Miura, Takamaro: Ataka, Toshiei; Chatani, Michio; and Nakamura. Akira, 4,259,489, Cl. 544-336.000.

Chattha, Mohinder S.; and Van Oene, Henk, to Ford Motor Company. Two component oligomeric phosphate/isocyanate composition. 4,259,472, Cl. 528-72.000.

Chaudhari, Panna R.: *See*—
Gupta, Surendra K.; and Chaudhari, Panna R., 4,259,440, Cl. 435-15.000.

Checon Corporation: *See*—
Fontaine, Gerard O., 4,258,573, Cl. 73-621.000.

Chemap AG: *See*—
Katinger, Hermann; and Scheirer, Winfried, 4,259,449, Cl. 435-241.000.

Chemische Werke Huels Aktiengesellschaft: *See*—
Dittmann, Walter; Frese, Albert; Hahmann, Otto; Plenikowski, Johannes; and Klawitter, Helmut, 4,259,410, Cl. 428-461.000.

Chemische Werke Huls AG: *See*—
Coenen, Alfred; Kosswig, Kurt; and von Praun, Ferdinand, 4,259,309, Cl. 423-481.000.

Chen, Nai Y.; and Garwood, William E., to Mobil Oil Corporation. Catalytic dewaxing of hydrocarbon oils. 4,259,174, Cl. 208-111.000.

Chernack, Milton P.: *See*—
Ernst, Frank J.; Chernack, Milton P.; and Perry, Gordon R., 4,258,491, Cl. 40-525.000.

Chevron Research Company: *See*—
Bakshi, Kiran R.; Marquis, David M.; and Paradis, Stephen G., 4,259,246, Cl. 260-346.750.
Bishop, Keith C., III, 4,259,213, Cl. 252-463.000.
Blanton, William A.; and Flanders, Robert L., 4,259,176, Cl. 208-120.000.
Buckley, Bruce S., 4,258,701, Cl. 126-434.000.
deVries, Louis; and King, John M., 4,259,194, Cl. 252-46.400.
Edwards, Laroy H., 4,259,104, Cl. 71-92.000.
King, John M.; and deVries, Louis, 4,259,195, Cl. 252-49.700.
Lilburn, Jennifer E., 4,259,192, Cl. 252-32.70E.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T.: *See*—
Gonczi, Csaba; Korbonits, Dezso; Kiss, Pal; Palosi, Endre; Heja, Gergely; Szvoboda nee Kanzel, Ida; Cser nee Kun, Judit; Szomor nee Wundele, Maria; Kormoczi, Gyorgy; and Kelemen, Andras, 4,259,344, Cl. 424-273.00B.

Choi, Nam S., to ALZA Corporation. Composition comprising useful agent such as fertilizers, housed in heterocyclic polymer. 4,259,102, Cl. 71-28.000.

Christiano, Victor; and Carroll, Charles B., to RCA Corporation. Faceplate assembly for a flat panel color display device. 4,259,612, Cl. 313-422.000.

Christman, Perry L. Seed corn detasseling machine. 4,258,537, Cl. 56-51.000.

Chrysler Corporation: *See*—
Fenn, Gordon W., 4,258,547, Cl. 60-272.000.
Stoody, Richard R., Jr.; and Adams, Ellsworth C., 4,258,673, Cl. 123-90.340.

Chu, Chin-Chiun, to Mobil Oil Corporation. Shape selective reactions with group via modified zeolite catalysts. 4,259,537, Cl. 585-467.000.

Chu, Pak-Jong: *See*—
Croft, Stanley A.; Dolan, Bruce I.; and Chu, Pak-Jong, 4,259,558, Cl. 200-283.000.

Chung, Koo H., to Miles Laboratories, Inc. Method for flavor improvement of soy protein. 4,259,364, Cl. 426-656.000.

Ciba-Geigy AG: *See*—
Webb, Terence C., 4,259,437, Cl. 430-382.000.

Ciba-Geigy Corporation: *See*—
Koller, Stefan; Zink, Rudolf; and Schwander, Hansrudolf, 4,259,236, Cl. 260-156.000.
Kreibich, Ursula; and Schmid, Rolf, 4,259,198, Cl. 252-70.000.
Paioni, Romeo; Schilling, Walter; and Bernasconi, Raymond, 4,259,338, Cl. 424-267.000.
Rasberger, Michael, 4,259,492, Cl. 546-21.000.
Sturm, Elmar; Eckhardt, Wolfgang; Gloor, Bernhard; and Nyfeler, Robert, 4,259,505, Cl. 548-262.000.
von der Crone, Jost, 4,259,488, Cl. 544-296.000.
Weis, Claus D., 4,259,495, Cl. 546-345.000.

Citizen Watch Co., Ltd.: *See*—
Morokawa, Shigeru, 4,259,715, Cl. 363-60.000.
Noguchi, Kazuo; Wakasugi, Makoto; and Kohyama, Fumio, 4,259,607, Cl. 310-364.000.
Ohtani, Akinobu; Hatanaka, Hideo; and Saito, Motoyuki, 4,259,551, Cl. 200-5.00A.

CKD Praha, oborovy podnik: *See*—
Kamenicky, Jan; Michl, Jan; Sindelar, Zdenek; Ibl, Stanislav; and Salivar, Jaroslav, 4,259,622, Cl. 318-86.000.

Clapper, Thomas W., to Kerr-McGee Chemical Corporation. Process for the manufacture of titanium disulfide. 4,259,310, Cl. 423-561.00R.

Clark Equipment Company: *See*—
Weber, Donald D., 4,258,831, Cl. 188-119.000.

Clark, William D. K.; Hull, Michael N.; and Arms, John T., to International Nickel Co., Inc., The. Photoelectrochemical cell with in-situ storage using hydrogen storage electrodes. 4,259,418, Cl. 429-111.000.

Clasen, Heinrich; and Clasen, Sven, to Clasen, Heinrich. Device for mixing flowable materials. 4,259,024, Cl. 366-339.000.

Clasen, Sven: *See*—
Clasen, Heinrich; and Clasen, Sven, 4,259,024, Cl. 366-339.000.

Clausse, Jacques: *See*—
della Faille d'huysse, Gaetan; Clausse, Jacques; and Boxus, Louis, 4,259,640, Cl. 324-439.000.

Cleare, Henry M.: *See*—
Luckey, George W.; and Cleare, Henry M., 4,259,588, Cl. 250-483.000.

Cling Cal Corporation: *See*—
Kettlestrings, John S.; and Bailey, Cecil J., 4,258,493, Cl. 40-600.000.

Cobb, Raymond F.: *See*—
Snell, James L.; Darby, Albert D., Jr.; and Cobb, Raymond F., 4,259,740, Cl. 375-99.000.

Cobbs, Walter H., Jr.; and Shong, Robert G., to Nordson Corporation. Bonding with foamed hot melt adhesives. 4,259,402, Cl. 428-310.000.

Cockrell, John R., Jr.; and Hanley, Dean C., to Procter & Gamble Company, The. Detergent composition containing organic peracids buffered for optimum performance. 4,259,201, Cl. 252-103.000.

Coenen, Alfred; Kosswig, Kurt; and von Praun, Ferdinand, to Chemische Werke Huls AG. Method for obtaining gaseous hydrogen chloride from dilute aqueous hydrochloric acid. 4,259,309, Cl. 423-481.000.

Coffman, Robert L.: *See*—
Das, Subodh K.; and Coffman, Robert L., 4,259,161, Cl. 204-67.000.

Cogbill, Philip H., II, to Brown & Williamson Tobacco Corporation. Process for improving the fill power of reconstituted tobacco. 4,258,728, Cl. 131-137.000.

Cole, Henry B., to American Optical Corporation. Image reversing array utilizing gradient refractive index elements. 4,258,978, Cl. 350-96.250.

Cole, Robert J. Air ring for the production of blown film. 4,259,047, Cl. 425-72.00R.

Cole, William L.; Stott, Geoffrey; and Bowden, Humphrey G., to Wilkinson Sword Limited. Method of making razor blade strip from austenitic steel. 4,259,126, Cl. 148-12.00E.

Collin, Gerd: *See*—
Stadelhofer, Jurgen; and Collin, Gerd, 4,259,171, Cl. 208-45.000.

Collins, Pat L. Powered manlift cart. 4,258,825, Cl. 182-14.000.

Coloplast A/S: *See*—
Sorensen, Erik L.; Wolff, Per; and Larsen, Hans-Ole, 4,258,705, Cl. 128-1.00R.

Comer, William T.: *See*—
Matier, William L.; and Comer, William T., 4,259,482, Cl. 544-8.000.

Commissariat a l'Energie Atomique: *See*—
Barneoud, Edouard R.; Guer, Michel; Lecouvreur, Paul; and Roumailhac, Jean, 4,258,937, Cl. 285-61.000.

Compagnie Generale d'Automatisme: *See*—
Estrabaud, Stephane; and Nourigat, Gerard, 4,258,622, Cl. 101-93.010.

Compagnie Generale des Etablissements Michelin: *See*—
de Saint-Michel, Michel R., 4,258,773, Cl. 152-352.00R.

Compo Industries, Inc.: *See*—
Veiga, Manuel J.; and Petersen, Richard E., 4,259,384, Cl. 428-97.000.

Conkle, Ellsworth V. Mounting for centrifugal switch and conveyor belt powered accessories. 4,258,840, Cl. 198-502.000.

Constanty, Alain: *See*—
Maisch, Wolfgang; and Constanty, Alain, 4,258,682, Cl. 123-333.000.

Continental Group, Inc., The: *See*—
Gordon, Gerald A., 4,258,855, Cl. 220-8.000.
Miller, Donald E., 4,258,562, Cl. 72-344.000.

Continental Pump, Inc.: *See*—
Goff, Melvin J.; and Goff, Gerald W., 4,258,908, Cl. 269-239.000.

Conway, Harry E., to United States of America, Air Force. Electrical feedthrough system for pressurized containers. 4,259,546, Cl. 174-153.00R.

Conway, John P. Dual speed hydraulic piston assembly. 4,258,609, Cl. 91-416.000.

Cook, John B., to Efficiency Production, Inc. Water and debris impermeable trench box panel. 4,259,028, Cl. 405-282.000.

Coots, Warren R. Adjustable foal feeder. 4,258,665, Cl. 119-61.000.

Copal Company Limited: *See*—
Arisaka, Kunio; and Namioka, Kenta, 4,258,990, Cl. 354-29.000.

Copes-Vulcan, Inc.: *See*—
Schnall, Ira H.; and Brighton, John A., 4,258,750, Cl. 137-625.300.

Corning Glass Works: *See*—
Borrelli, Nicholas F., 4,259,406, Cl. 428-410.000.

Coulter Systems Corporation: *See*—
Kuehnle, Manfred R., 4,259,005, Cl. 355-10.000.

Countess York Limited: *See*—
York, Judd, 4,258,439, Cl. 2-69.500.

Cowen, Theodore A., Jr.; and McCartan, Thomas F., to Belvedere Company, Inc. Modular cabinet with mirror. 4,258,964, Cl. 312-224.000.

Cox, Arthur: *See*—
Paranjpe, Suresh C.; Cox, Arthur; Scott, Burton W.; Nodov, Eugene; and Sutera, Richard, 4,259,696, Cl. 358-296.000.

Cox, Samson A.: *See*—
LeVert, Francis E.; and Cox, Samson A., 4,259,575, Cl. 250-336.000.

CPC International: *See—*
Glass, Richard W.; and Glogowski, Joseph, 4,259,445, Cl. 435-178.000.
Craig, Jack S.: *See—*
Upton, Albert E.; Upton, Barney G.; and Craig, Jack S., 4,258,778, Cl. 160-383.000.
Craine, John C., to Advertising Metal Display Company. Peg hook display supporting apparatus. 4,258,892, Cl. 248-220.400.
Crandall, Richard W. Electric books and microfilm structures and the production thereof for use in electric books. 4,258,986, Cl. 353-26.00R.
Crivello, James V., to General Electric Company. Curable organic resin compositions and foaming method. 4,259,454, Cl. 521-113.000.
Croft, Stanley A.; Dolan, Bruce I.; and Chu, Pak-Jong, to Northern Telecom Limited. Multiple cantilever spring contact switch. 4,259,558, Cl. 200-283.000.
Crosby, John, to Imperial Chemical Industries Limited. Halogenated hydrocarbons and a method for their preparation. 4,259,263, Cl. 570-135.000.
Cross, Peter E.; and Dickinson, Roger P., to Pfizer Inc. 2-(Imidazol-1-ylmethyl)pyrroles. 4,259,345, Cl. 424-273.00R.
Cross, Richard L.: *See—*
Thompson, Donald C.; Cross, Richard L.; and Rose, Jimmie, 4,258,947, Cl. 294-15.000.
Crumm, John C.; and Carlsen, George D. Optical gem analyzer. 4,259,011, Cl. 356-30.000.
Cseh, Gyorgy: *See—*
Szilagyi, Geza; Kasztreiner, Endre; Kosary, Judit; Matyus, Peter; Huszti, Zsuzsa; Cseh, Gyorgy; Kenessey, Agnes; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan. 4,259,328, Cl. 424-248.530.
Cser nee Kun, Judit: *See—*
Gonczi, Csaba; Korbonits, Dezso; Kiss, Pal; Palosi, Endre; Heja, Gergely; Szvoboda nee Kanzel, Ida; Cser nee Kun, Judit; Szomor nee Wundele, Maria; Kormoczi, Gyorgy; and Kelemen, Andras, 4,259,344, Cl. 424-273.00B.
Csontos, Peter; Henter, Laszlo; Kalman, Laszlo; Kondor, Tibor; and Wein, Istvan, to Medicor Muvek. High-power diagnostical X-ray equipment with thyristor converter. 4,259,581, Cl. 250-402.000.
Curry, Robert E.; Simonsen, Michael G.; and Schwartz, Eric D., to Bio-Rad Laboratories, Inc. Apparatus for retrieving liquid samples from test tubes. 4,259,289, Cl. 422-64.000.
Cutore, Gaetano. Vertically movable apparatus for fluid delivery from stationary source. 4,258,744, Cl. 137-355.270.
D. L. Auld Company, The: *See—*
Reed, Robert W., 4,259,388, Cl. 428-174.000.
D.O.V.E. Equipment Corporation: *See—*
Boettcher, William C., 4,258,860, Cl. 221-75.000.
Daimler-Benz Aktiengesellschaft: *See—*
Klink, Rainer, 4,258,816, Cl. 180-68.500.
Lamm, Heinz, 4,258,676, Cl. 123-142.50R.
Scharm, Dieter; Emmer, Ludwig; Reinhard, Theodor; and Kneib, Rudi, 4,258,555, Cl. 62-244.000.
Scheying, Heinz, 4,259,040, Cl. 417-493.000.
Dainippon Ink & Chemicals, Inc.: *See—*
Okamoto, Tsuneo; and Wakao, Toshio, 4,259,634, Cl. 324-74.000.
Saito, Isamu; Aoyagi, Koshiki; Okumura, Masatoshi; Banba, Masayoshi; and Shibahara, Naoki, 4,259,225, Cl. 260-31.80B.
Dalgleish, Jack F.: *See—*
Lukas, Helmut H.; Hvezda, Jaroslav M.; and Dalgleish, Jack F., 4,258,977, Cl. 350-96.210.
Dalibor, Horst; Kiessling, Hans-Joachim; and Quednau, Peter, to Hoechst Aktiengesellschaft. Copolymer solution of acrylic resin, process for its manufacture and use thereof in reactive lacquers. 4,259,224, Cl. 260-31.2XA.
Dam, Rudy J.: *See—*
Prober, James M.; and Dam, Rudy J., 4,259,573, Cl. 250-287.000.
D'Amato, Ralph J., to RCA Corporation. Projection kinescope and method of operation. 4,259,692, Cl. 358-237.000.
Damerell, Jerry A.: *See—*
Gebhart, Daniel E.; Smith, Brace C.; Young, D. Craig; and Damerell, Jerry A., 4,258,544, Cl. 60-39.320.
Danehy, James P., to Bernard Wolnak and Associates, Inc. Synthesis of ascorbic acid from lactose. 4,259,443, Cl. 435-137.000.
Danfoss A/S: *See—*
Huelle, Zbigniew R.; and Nielsen, Leif, 4,258,899, Cl. 251-11.000.
Jakobsen, Jakob S.; and McCulloch, Robert M., 4,259,621, Cl. 318-85.000.
Jorgensen, Iver; Veigert, Steen; and Andersen, Niels E., 4,259,038, Cl. 417-53.000.
Danilychev, Vladimir A.: *See—*
Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladimir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K., 4,259,658, Cl. 340-26.000.
Danna, Louis J., to B. B. Greenberg Co. Blank for stone setting. 4,258,458, Cl. 29-10.000.
Darby, Albert D., Jr.: *See—*
Snell, James L.; Darby, Albert D., Jr.; and Cobb, Raymond F., 4,259,740, Cl. 375-99.000.
Dare, Roy R.; Houlgrave, Robert C.; and Shelton, William S., to ACF Industries, Incorporated. Expanding gate valve having mechanically secured seats. 4,258,743, Cl. 137-327.000.
D'Arnal, Hubert A. Sealed container adapted for medical usage and method of sealing. 4,259,184, Cl. 210-85.000.
Darriet, Bernard: *See—*
Pezat, Michel; Hbika, Abdelmalek; Darriet, Bernard; and Hagenmuller, Paul, 4,259,110, Cl. 75-168.00J.
Das, Subodh K.; and Coffman, Robert L., to Aluminum Company of America. Process for producing aluminum and electrodes for bipolar cell. 4,259,161, Cl. 204-67.000.
Dautremont-Smith, William C.: *See—*
Beni, Gerardo; Dautremont-Smith, William C.; Schiavone, Lawrence M.; and Shay, Joseph L., 4,258,984, Cl. 350-357.000.
Davidson, Bruce W.; Pomeroy, Frederick A.; and Sandhu, M. Akram, to Eastman Kodak Company. Electrographic process for making transparencies. 4,259,422, Cl. 430-17.000.
Davis, James A.; and Kang, Jung W., to Firestone Tire & Rubber Company, The. Cured rubber skim stock compositions having improved metal adhesion and metal adhesion retention. 4,258,770, Cl. 152-330.00R.
Davis, Robert H.: *See—*
Piotrowski, Alfred B.; and Davis, Robert H., 4,259,206, Cl. 252-34.700.
Davis, Roger I.: *See—*
Britton, Arthur; Smith, John C.; Davis, Roger I.; and Page, John A., 4,259,379, Cl. 427-356.000.
Davy, Patrick F., to Andre Rubber Company Limited. Pipe couplings. 4,258,938, Cl. 285-93.000.
Dayco Corporation: *See—*
Hollaway, Gerald C., Jr., 4,258,582, Cl. 474-254.000.
de la Burde, Roger Z.; Aument, Patrick E.; and Utsch, Francis V., to Philip Morris Incorporated. Novel tobacco product and improved process for the expansion of tobacco. 4,258,729, Cl. 131-140.00P.
Dean, Douglas J.; Linford, Patrick F. T.; and Savage, John, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Packages for microwave integrated circuits. 4,259,684, Cl. 357-74.000.
deBarbadillo, John J.: *See—*
Hennion, Francis J.; deBarbadillo, John J.; and Ahmad, Umar M. U., 4,259,296, Cl. 423-53.000.
De Boel, Marcel: *See—*
Nolte, Hans-Henning; Baudin, Pol; and De Boel, Marcel, 4,259,273, Cl. 264-42.000.
Decker, Elmer L.; and Moon, James, to Decker Engineering Corporation. Load indicating apparatus having a hydraulic sensing unit and coupling pin type electronic sensing unit. 4,258,566, Cl. 73-141.00R.
Decker Engineering Corporation: *See—*
Decker, Elmer L.; and Moon, James, 4,258,566, Cl. 73-141.00R.
De Coene, Frans J. G. C.; and Vansteelant, Marc G., to Sperry Corporation. Agricultural bale accumulator. 4,259,035, Cl. 414-38.000.
Deere & Company: *See—*
Glaser, Fritz; Gortz, Christoph; Buhler, Kurt K.; Klimmer, Josef W.; Laberheim, Rene; Pauli, Klaus H.; and Velten, Werner, 4,258,726, Cl. 130-27.00L.
Jones, William A.; and Kulak, John, 4,258,535, Cl. 56-13.600.
Deets, Roy L.: *See—*
Scott, Dale; and Deets, Roy L., 4,258,478, Cl. 434-94.000.
DeFrank, Michael P.; and Bancsi, Joseph A., to Baxter Travenol Laboratories, Inc. Intravenous fluid filter. 4,259,187, Cl. 210-446.000.
Degenhardt, Charles R., to Procter & Gamble Company, The. Preparation of hydroxyl zwitterionic compounds. 4,259,249, Cl. 260-404.000.
Degrand, Francoise: *See—*
Beregi, Laszlo; Hugon, Pierre; Bure, Jacques; and Degrand, Francoise, 4,259,335, Cl. 424-258.000.
de Klerk, John, to Westinghouse Electric Corp. Electroacoustic delay line apparatus. 4,259,649, Cl. 333-144.000.
De Lay, Roger L., to American Cyanamid Company. Concurrent use of avoparcin with growth-promoting implants in cattle. 4,259,320, Cl. 424-118.000.
Delk, Charles W.; Brandenburg, Lee H.; and Parish, Edwin J., to Immobile Home Company, The. Housing unit formed from mobile or modular parts. 4,258,512, Cl. 52-79.700.
della Faille d'huysse, Gaetan; Clausse, Jacques; and Boxus, Louis, to Solvay & Cie. Process and device for determining a chemical deicer on a road. 4,259,640, Cl. 324-439.000.
Demeny, Gary L.: *See—*
Bagby, Thomas L.; Demeny, Gary L.; and Smead, Robert G., 4,258,655, Cl. 118-635.000.
Demessemaekers, Emiel M.; and Pracht, Hans J., to Procter & Gamble Company, The. Fabric treating articles and process. 4,259,373, Cl. 427-242.000.
Denbow, Nicholas J., to Bestobell Mobrey Limited. Electrostatic monitoring system. 4,258,736, Cl. 137-2.000.
Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Nakano, Tatsuo; Hori, Shozo; and Kishi, Ikuji, 4,259,462, Cl. 525-263.000.
Derby, Jeffrey H., to Bell Telephone Laboratories, Incorporated. Repeater feedback circuit. 4,259,642, Cl. 330-288.000.
de Saint-Michel, Michel R., to Compagnie Generale des Etablissements Michelin. Tire for airplane wheels. 4,258,773, Cl. 152-352.00R.
Detweiler, Charles A., to Schmelzer Corporation. Vacuum motor for carburetors. 4,258,611, Cl. 92-84.000.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Hentschel, Klaus; and Bittner, Friedrich, 4,259,487, Cl. 544-218.000.
de Vries, Jochem J.: *See—*
Boiten, Ebbe; and de Vries, Jochem J., 4,258,470, Cl. 30-43.600.
deVries, Louis; and King, John M., to Chevron Research Company. Reaction product of ammonium tetrathiomolybdate with basic nitro-

gen compounds and lubricants containing same. 4,259,194, Cl. 252-46.400.

deVries, Louis: *See—*
King, John M.; and deVries, Louis, 4,259,195, Cl. 252-49.700.

De Winter, Walter F.: *See—*
Gilliams, Yvan K.; De Winter, Walter F.; and Timmerman, Daniel M., 4,259,429, Cl. 430-124.000.

DeWoskin, Irvin S., to Orthoband Company, Inc. Orthodontic traction apparatus. 4,259,065, Cl. 433-5.000.

Diamond Shamrock Corporation: *See—*
Goble, Paul H., 4,258,715, Cl. 128-283.000.
Schaaf, Kurt H., 4,259,525, Cl. 562-559.000.

Dickinson, Roger P.: *See—*
Cross, Peter E.; and Dickinson, Roger P., 4,259,345, Cl. 424-273.00R.

Didier Engineering GmbH: *See—*
Flockenhaus, Claus; and Hackler, Erich, 4,259,312, Cl. 423-659.000.

Didier-Werke AG: *See—*
Laux, Walter; Hebel, Rudolf; Artelt, Peter; Esfeld, Gerhard; and Jacob, Arnold, 4,259,064, Cl. 432-222.000.

Diesel Kiki Co., Ltd.: *See—*
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Dietz, Lloyd H.: *See—*
Perry, Clifford R.; and Dietz, Lloyd H., 4,258,784, Cl. 165-166.000.

Digital Equipment Corporation: *See—*
Boudreau, Ronald B., 4,258,967, Cl. 312-322.000.
Kaman, Charles H.; Sullivan, Daniel T.; O'Loughlin, James F.; and Mudge, Craig, 4,259,718, Cl. 364-200.000.

Dildine, Dean M.: *See—*
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Dillon, Benny N., to Masstron Scale, Inc. Weighing apparatus. 4,258,814, Cl. 177-126.000.

Dilot, Rolf M., to Tetra Pak International AB. Arrangement for the feeding of objects to and grouping them on a base. 4,258,532, Cl. 53-538.000.

DiMatteo, Paul; and Stern, Howard, to Solid Photography, Inc. Generation of contiguous data files of three-dimensional information. 4,259,589, Cl. 250-558.000.

DiPippo, Carmine A., to James River Graphics Inc. Method for preparing 2-sulfochloride benzoates and the use of same in the preparation of saccharin. 4,259,499, Cl. 548-211.000.

Director-General of the Agency of Industrial Science and Technology: *See—*
Ueda, Tetsuo; Ohta, Masuo; and Sugano, Seiroku, 4,259,177, Cl. 208-127.000.
Watanabe, Tadahiko; and Shimizu, Hiroki, 4,259,119, Cl. 106-55.000.

DiRoss, James. Dual radiator heat exchanger. 4,259,268, Cl. 261-151.000.

Distaso, Leonard A.: *See—*
Rockola, Donald C.; Schneider, Michael; and Distaso, Leonard A., 4,258,838, Cl. 194-1.00R.

Ditmars, Charles D.: *See—*
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Dittmann, Walter; Frese, Albert; Hahmann, Otto; Plenikowski, Johannes; and Klawitter, Helmut, to Chemische Werke Huels Aktiengesellschaft. Random propylene copolymers for electric cable insulation. 4,259,410, Cl. 428-461.000.

Diveley, William R., to Boots Hercules Agrochemicals Co. Solvent process for hydrolyzing 5-isothiocyano-5,6-dihydrodicyclopentadiene. 4,259,260, Cl. 564-459.000.

Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See—*
Gruden, Dusan; and Markovac, Uwe, 4,258,681, Cl. 123-277.000.

Dr. Ing. Rudolf Hell GmbH: *See—*
Doelves, Juergen, 4,259,697, Cl. 358-299.000.

Doctor, S. R.: *See—*
Hildebrand, B. Percy; and Doctor, S. R., 4,258,574, Cl. 73-625.000.

Doelves, Juergen, to Dr. Ing. Rudolf Hell GmbH. Method for improved reproduction of edges formed by engraving of screened printing forms. 4,259,697, Cl. 358-299.000.

Dolan, Bruce I.: *See—*
Croft, Stanley A.; Dolan, Bruce I.; and Chu, Pak-Jong, 4,259,558, Cl. 200-283.000.

Dolby, Lloyd J., to State Board of Higher Education for and on Behalf of the University of Oregon. Method of synthesis for a chemical precursor to strigol. 4,259,512, Cl. 560-119.000.

Dolowy, Joseph F., Jr.; Webb, Bradley A.; and Supan, Edward C., to DWA Composite Specialties, Inc. Process for manufacture of reinforced composites. 4,259,112, Cl. 75-208.00R.

Domtar Inc.: *See—*
Richardson, Neil G., 4,259,378, Cl. 427-352.000.

Donahue, Thomas H., to International Telephone and Telegraph Corporation. Sidelobe rejection filter. 4,259,650, Cl. 333-166.000.

Donetti, Arturo; Cereda, Enzo; and Bellora, Elio, to Istituto de Angeli S.p.A. Process for the preparation of stereospecific trans, trans-farnesylacetic acid. 4,259,253, Cl. 260-418.000.

Dorling, Rolf; and Hemschemeier, Hans, to L. & C. Steinmuller GmbH. Suspension for a thermally heavy load cylindrical pipe assembly. 4,258,781, Cl. 165-67.000.

Dougherty, Jerald M.: *See—*
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Dougherty, William E., Jr., to International Business Machines Corporation. Fine line repair technique. 4,259,367, Cl. 427-96.000.

Douglas, George R.: *See—*
Anderson, Phillip R.; Douglas, George R.; and Thompson, John H., 4,259,732, Cl. 367-13.000.

Dover Corporation: *See—*
Moore, Glenn E., 4,258,760, Cl. 141-206.000.

Dow Chemical Company, The: *See—*
Dunn, James L., Jr.; Ward, John K.; and Martin, Patrick H., 4,258,649, Cl. 118-61.000.

Dow Corning Corporation: *See—*
Malek, James R.; and Speier, John L., 4,259,103, Cl. 71-67.000.

Dowden, Sanford R.: *See—*
Sizer, Phillip S.; Pearce, Joseph L.; and Dowden, Sanford R., 4,258,794, Cl. 166-356.000.

Doyama, Umeo, to Riccar Company, Ltd. Electromagnetic control device for sewing machine. 4,258,638, Cl. 112-158.00E.

Dragerwerk Aktiengesellschaft: *See—*
Leichnitz, Kurt, 4,259,287, Cl. 422-59.000.

Dragone, Corrado; and Gans, Michael J., to Bell Laboratories. Phased array antenna arrangement with filtering to reduce grating lobes. 4,259,674, Cl. 343-909.000.

Drake, Charles A., to Phillips Petroleum Company. Catalytic hydrogenation of unsaturated dinitriles. 4,259,262, Cl. 564-491.000.

Dravo Corporation: *See—*
Ban, Thomas E.; and Rao, Ashok D., 4,259,085, Cl. 44-26.000.

Dresser Industries, Inc.: *See—*
Eckman, Richard E., 4,258,799, Cl. 173-169.000.
Saxman, William C., 4,258,805, Cl. 175-344.000.
Upton, Thomas E., 4,258,926, Cl. 277-116.400.

Drutchas, Gilbert H.; and Spencer, Phillip B., to TRW Inc. Fuel pump assembly. 4,259,044, Cl. 418-82.000.

Drysh, Leo I., to Moline Corporation. Limit stop for controlling stopper rod travel in a bottom pour ladle. 4,258,868, Cl. 222-602.000.

Dubberly, Gregory T., to Mead Corporation, The. Apparatus and method for container recognition. 4,259,571, Cl. 250-223.00B.

Dubetsky, Derry J., to International Business Machines Corporation. Method of achieving uniform sintering shrinkage in a laminated planar green ceramic substrate and apparatus therefor. 4,259,061, Cl. 432-13.000.

Dubois, Jean-Claude: *See—*
Eranian, Armand; Dubois, Jean-Claude; Gazard, Maryse; and Barre, Francoise, 4,259,162, Cl. 204-159.160.

DuBois, Richard, to Wagner Electric Corporation. Fluorescent indicator and method of making same. 4,259,613, Cl. 313-497.000.

Duembgen, Gerd: *See—*
Krabetz, Richard; Herrmann, Walter; Scholz, Norbert; Engelbach, Heinz; Engert, Gerd-Juergen; Willersinn, Carl-Heinz; Duembgen, Gerd; and Thiessen, Fritz, 4,259,211, Cl. 252-443.000.

Duhe, Nanda V.; and Hendrix, Donald L., to University of Houston, Central Campus. Poison ivy relief composition. 4,259,318, Cl. 424-94.000.

DuMez, Frank M., to Teledyne Industries, Inc. Method and apparatus for aiding measurement of preformed tubes. 4,258,474, Cl. 33-174.00P.

Dumont, Claude: *See—*
Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,259,337, Cl. 424-267.000.

Dundua, Vakhtang J.: *See—*
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Dunkelmann, Dieter: *See—*
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Dunlap, Kenneth L.; and Knofel, Hartmut, to Bayer Aktiengesellschaft; and Mobay Chemical Corporation. Process for the preparation of mixtures of polyamines of the polyamino-polyaryl-polymethylene type. 4,259,526, Cl. 564-331.000.

Dunlop Limited: *See—*
Wilde, Ralph, 4,258,767, Cl. 152-158.000.

Dunn, James L., Jr.; Ward, John K.; and Martin, Patrick H., to Dow Chemical Company, The. Apparatus for coating surfaces. 4,258,649, Cl. 118-61.000.

Duntsev, Vsevolod Y.: *See—*
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Du Pont de Nemours, E. I., and Company: *See—*
Adams, John B., Jr.; and Wommack, Joel B., Jr., 4,259,532, Cl. 568-649.000.
Campo, Edgar A., 4,258,846, Cl. 206-412.000.
O'Brien, William G., 4,259,055, Cl. 425-376.00A.
Ojakaar, Leo, 4,259,227, Cl. 260-37.00N.
Prober, James M.; and Dam, Rudy J., 4,259,573, Cl. 250-287.000.
Simons, Donald M., 4,259,230, Cl. 260-42.460.
Vassiliou, Eustathios, 4,259,375, Cl. 427-267.000.

du Quesne, Francis. Mechanism for adjusting the position of the tool carrier arm of an appliance for fitting a tire on the rim of a wheel and for removing a tire from the rim of a wheel. 4,258,777, Cl. 157-1.240.

Durkoppwerke GmbH: *See—*
Hannemann, Franz, 4,258,637, Cl. 112-121.260.

Dutcher, Daniel P.: *See*—
Mode, Duane; and Dutcher, Daniel P., 4,258,881, Cl. 229-34.0HW.
Duthie, Iain F., to Agricultural Production and Vegetable Products, Ltd. Preparation of food products. 4,259,358, Cl. 426-46.000.
Dutra, Antonio S. Rocking couch, chaise, lounge, recliner, chair or relaxer. 4,258,952, Cl. 297-258.000.
DWA Composite Specialties, Inc.: *See*—
Dolowy, Joseph F., Jr.; Webb, Bradley A.; and Supan, Edward C., 4,259,112, Cl. 75-208.00R.
Dynamit Nobel Aktiengesellschaft: *See*—
Moschter, Erwin, 4,259,408, Cl. 428-424.600.
Dynell Electronics Corporation: *See*—
Ross, Joseph A.; and Stern, Howard K., 4,259,017, Cl. 356-375.000.
Dynesen, Henning, to Henning Dynesen A/S. Combined casing and operational support for a pocket calculator. 4,259,568, Cl. 235-1.00D.
Earmark, Inc.: *See*—
Valley, Robert A.; and MacDonald, David S., 4,259,547, Cl. 179-1.00B.
East Moline Metal Products Company: *See*—
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Eastman Kodak Company: *See*—
Davidson, Bruce W.; Pomeroy, Frederick A.; and Sandhu, M. Akram, 4,259,422, Cl. 430-17.000.
Frank, David S.; and Sundberg, Michael W., 4,259,313, Cl. 424-8.000.
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Jackson, Winston J., Jr.; and Kuhfuss, Herbert F., 4,259,478, Cl. 528-307.000.
Luckey, George W.; and Cleare, Henry M., 4,259,588, Cl. 250-483.000.
Rasch, Arthur A.; and Searle, Roger, 4,259,164, Cl. 204-195.00F.
Trotter, Jimmy R.; McConnell, Richard L.; and Joyner, Frederick B., 4,259,470, Cl. 526-348.200.
Wilson, John C.; and Yacobucci, Paul D., 4,259,469, Cl. 526-288.000.
Eastman Whipstock, Inc.: *See*—
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Ebato, Noboru: *See*—
Tamura, Kohki; Kahara, Toshiki; Horiba, Tatsuo; Ebato, Noboru; and Asai, Osamu, 4,259,415, Cl. 429-90.000.
Eberl, Tertulin. Breast prosthesis with stiffening ribs. 4,258,442, Cl. 3-36.000.
Eckert, Konrad; Espenschied, Helmut; Rothfuss, Georg; and Witte, Alexander, to Robert Bosch GmbH. Apparatus for controlling gear shifts in automatic transmissions. 4,258,591, Cl. 74-866.000.
Eckert, Konrad, to Robert Bosch GmbH. Reciprocating engine with cylindrical combustion chamber. 4,258,680, Cl. 123-254.000.
Eckhardt, Wolfgang: *See*—
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Eckman, Richard E., to Dresser Industries, Inc. Inlet control valve. 4,258,799, Cl. 173-169.000.
Eddings, Jack L. Decorative lighting assembly. 4,259,709, Cl. 362-231.000.
Eddy, William R., to Phillips Petroleum Company. Method and apparatus for applying sealant to a seam in a container. 4,259,372, Cl. 427-236.000.
Edefonti, Lucio: *See*—
Buzio, Pierpaolo; and Edefonti, Lucio, 4,259,412, Cl. 428-516.000.
Edelman, Brian S.; and Robinson, Ralph L., Jr., to Ford Motor Company. Binary input processing in a computer using a stack. 4,259,719, Cl. 364-200.000.
Edelson, Jack. Pannier bags and device for attachment to bicycle. 4,258,870, Cl. 224-32.00A.
Edstrom, William E. Adjustable animal watering or drinking device. 4,258,666, Cl. 119-72.500.
Edwards, Laroy H., to Chevron Research Company. Herbicidal and plant-growth-regulating 2-phenoxyalkyl-oxadiazoles. 4,259,104, Cl. 71-92.000.
Efficiency Production, Inc.: *See*—
Cook, John B., 4,259,028, Cl. 405-282.000.
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Wilson, Wallace; and Egenski, Frank J., 4,258,508, Cl. 51-283.00R.
Eggensperger, Heinz; Rehn, Dieter; Beilfuss, Wolfgang; and Nolte, Helmut, to Sterling Drug Inc. Disinfecting tissue. 4,259,383, Cl. 428-72.000.
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Elderfield, Raymond N., to Housley Kimmich Company. Cooling of tuyeres in blast furnaces. 4,258,633, Cl. 110-182.500.
Electric Power Research Institute: *See*—
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Rolski, Stanislaw, 4,259,242, Cl. 260-244.400.
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Ellison, Donald R. Educational building blocks. 4,258,497, Cl. 46-25.000.
El-Roy, Menachem: *See*—
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Elsner, Emil A.; Ameling, Dieter C.; Assenmacher, Rolf; and Fuchs, Gerhard, to Korf-Stahl AG, a part interest. Melting furnace. 4,259,539, Cl. 13-32.000.
Eltra Corporation: *See*—
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Emmer, Ludwig: *See*—
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Emmons, James D. Extra coronal attachment. 4,259,073, Cl. 433-177.000.
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Endo, Ichiro; Kobayashi, Hajime; Komatsu, Toshiyuki; and Ohno, Shigeru, to Canon Kabushiki Kaisha. Heat-developable photosensitive material. 4,259,424, Cl. 430-48.000.
Engel, Wolfhard; Trummlitz, Gunter; Seeger, Ernst; Haarmann, Walter; Engelhardt, Gunther; and Zimmermann, Rainer, to Boehringer Ingelheim GmbH. 4-Hydroxy-2H-[1]-benzothieno [2,3-e]-1,2-thiazine-3-carboxamide-1,1-dioxides and salts thereof. 4,259,336, Cl. 424-246.000.
Engelbach, Heinz: *See*—
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Eranian, Armand; Dubois, Jean-Claude; Gazard, Maryse; and Barre, Francoise, to Thomson-CSF. Family of compounds crosslinkable by photon irradiation. 4,259,162, Cl. 204-159.160.
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Eriksson, Rolf: *See*—
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Ernst, Frank J.; Chernack, Milton P.; and Perry, Gordon R. Location indicating device. 4,258,491, Cl. 40-525.000.
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Escher Wyss Limited: *See*—
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Eschwey, Helmut; and Gorzinski, Manfred, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Water-dilutable lacquers and their use in baked coatings. 4,259,219, Cl. 260-22.00A.

Esfeld, Gerhard: *See*—
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Eshnaur, Helen E.; and Shugart, Jack I., to Ralston Purina Company. Animal dust bag. 4,258,667, Cl. 119-159.000.

Espenschied, Helmut: *See*—
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Estrabaud, Stephane; and Nourigat, Gerard, to Compagnie Generale d'Automatisme. Method of positioning a moving part and a printer operating in accordance with said method. 4,258,622, Cl. 101-93.010.

ETA A.G. Ebauches-Fabrik: *See*—
Vuille, Pierre-Alain, 4,259,735, Cl. 368-34.000.

Ethyl Corporation: *See*—
Anderson, Larry W., 4,259,305, Cl. 423-300.000.
Bauer, Dennis P., 4,259,441, Cl. 435-23.000.

European Atomic Energy Community (EURATOM): *See*—
Krueger, Gottfried J., 4,259,638, Cl. 324-306.000.

Evans, Ronald K. Folding mast ladder. 4,258,828, Cl. 182-95.000.

Everbrite Electric Company: *See*—
Trame, Charles E., 4,258,490, Cl. 40-518.000.

Exxon Research and Engineering Co.: *See*—
Bellows, Richard J.; and Grimes, Patrick G., 4,259,417, Cl. 429-101.000.
Gladrow, Elroy M.; Winter, William E.; and Schuette, William L., 4,259,212, Cl. 252-455.00Z.
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Li, Norman N., 4,259,189, Cl. 260-29.6AN.
Liotta, Ronald, 4,259,084, Cl. 44-1.00R.
Liotta, Ronald, 4,259,167, Cl. 208-8.0LE.
Liotta, Ronald, 4,259,168, Cl. 208-8.0LE.
Liotta, Ronald, 4,259,172, Cl. 208-46.000.
Liotta, Ronald; and Gorbaty, Martin L., 4,259,173, Cl. 208-46.000.
Lundberg, Robert D.; and Makowski, Henry S., 4,259,284, Cl. 264-184.000.
Purwin, Paul E.; and Shaw, Robert F., 4,259,122, Cl. 136-258.000.
Say, Geoffrey R., 4,259,301, Cl. 423-228.000.
Tirtiaux, Robert; and Laurent, Robert M., 4,259,193, Cl. 252-33.000.

Ezra C. Lundahl, Inc.: *See*—
Lundahl, Ezra C.; and Wiser, J. Gordon, 4,258,886, Cl. 241-101.700.

Facet Enterprises, Inc.: *See*—
Miller, Donald L., 4,258,836, Cl. 192-84.00C.

Faerber, Nelson A.: *See*—
Bonner, Edgar L.; and Faerber, Nelson A., 4,259,689, Cl. 358-165.000.

Fahey, Dennis M., to PPG Industries, Inc. Glass fibers with reduced tendency to form gumming deposits and sizing composition. 4,259,190, Cl. 252-8.600.

Fahey, Robert J.; Norbedo, Robert A.; and Schlener, J. Edward, to GTE Products Corporation; and GTE Laboratories Incorporated. Apparatus for monitoring and signalling system. 4,259,548, Cl. 179-5.00R.

Fahrbach, Erich; Graber, Adolf; Knoke, Jurgen; Schweizer, Helmer; and Tecl, Bohuslav, to Carl Freudenberg, Firma. Nonwoven fabric having the appearance of a woven fabric. 4,259,390, Cl. 428-195.000.

Falkstein, Frank B. Cap display package. 4,258,842, Cl. 206-45.340.

Falxa, Martin L.; and Meara, Kenneth J., to Polaroid Corporation. Method for preparing photosensitive silver halide emulsions. 4,259,438, Cl. 430-567.000.

Famolare, Inc.: *See*—
Famolare, Joseph P., Jr., 4,258,480, Cl. 36-91.000.

Famolare, Joseph P., Jr., to Famolare, Inc. Running shoe. 4,258,480, Cl. 36-91.000.

Farber, Heinrich: *See*—
Schmidt, Manfred; and Farber, Heinrich, 4,259,586, Cl. 250-481.000.

Farmitalia Carlo Erba S.p.A.: *See*—
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,259,244, Cl. 260-346.220.

Farrow, Cecil W., to Bell Telephone Laboratories, Incorporated. One-bit frequency-shift-keyed modulator. 4,259,648, Cl. 332-9.00R.

Fauke, Allen R.: *See*—
Buriks, Rudolf S.; Fauke, Allen R.; and Munch, John H., 4,259,464, Cl. 525-480.000.

Faustini, Franco: *See*—
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,259,244, Cl. 260-346.220.

Faxvog, Frederick R.; and Lewis, Robert W., to General Motors Corporation. Optical method for inspecting spherical parts. 4,259,013, Cl. 356-237.000.

Fazekas, Gabor: *See*—
Levai, Laszlo; Fazekas, Gabor; Petocz, Lujza; and Grasser, Katalin, 4,259,257, Cl. 260-501.180.

Fegley, Richard F.; and Kiss, Steven R., to PACO Winders, Inc. Paper tube winders and cut off saws. 4,258,613, Cl. 493-22.000.

Feiman, Vladimir; and Luksha, Eugene, to Cardiac Pacemakers, Inc. Lithium chlorine battery containing thionyl halide. 4,259,420, Cl. 429-196.000.

Feldstein, Nathan. Catalytic promoters in electroless plating catalysts applied as an emulsion. 4,259,376, Cl. 427-304.000.

Fell, Wolfgang: *See*—
Gause, Dieter; Wolf, Theo; and Fell, Wolfgang, 4,259,700, Cl. 360-95.000.

Fellrath, Jean; and Vittoz, Eric, to Centre Electronique Horloger S.A. Integrated insulated-gate field-effect transistor control device. 4,259,600, Cl. 307-270.000.

Felten & Guilleaume Carlswerk AG: *See*—
Volkmann, Klaus, 4,259,631, Cl. 324-57.0SS.

Fenn, Gordon W., to Chrysler Corporation. Engine cylinder head having thermal insulation in a coolant passage adjacent an exhaust outlet. 4,258,547, Cl. 60-272.000.

Fernando, Quintus: *See*—
Zeitlin, Harry; and Fernando, Quintus, 4,259,295, Cl. 423-24.000.

Ferris Manufacturing Corp.: *See*—
Sessions, Robert W.; Jeslis, Jerome; and Rodzen, Richard A., 4,258,722, Cl. 128-753.000.

Fichtel & Sachs AG: *See*—
Vogt, Peter; and Hoh, Rainer, 4,258,943, Cl. 285-340.000.

Field Container Corp.: *See*—
Sykora, John M., 4,258,875, Cl. 229-41.00B.

Figueredo, Fernando; Valdes, Guillermo A.; and Framil, Armando R. Cutting device having a flexible cutting element. 4,258,763, Cl. 144-34.00R.

Filipova, Rufina A.: *See*—
Gurvich, Yakov A.; Kumok, Simona T.; Latysheva, Galina G.; Rybak, Anna I.; Styskin, Evgeny L.; Liakumovich, Alexandr G.; Michurov, Jury I.; Filipova, Rufina A.; Yanshevsky, Vladimir A.; Rutman, Grigory I.; and Logutov, Igor J., 4,259,534, Cl. 568-720.000.

Filter Specialists, Inc.: *See*—
Morgan, Howard W., 4,259,188, Cl. 210-448.000.

Filtrol Corporation: *See*—
Alafandi, Hamid; and Stamires, Dennis, 4,259,210, Cl. 252-438.000.

Findeisen, Bernd: *See*—
Schwander, Dieter; and Findeisen, Bernd, 4,259,265, Cl. 261-41.00D.

Finike Italiana Marposs, S.p.A.: *See*—
Solaroli, Sergio, 4,258,850, Cl. 209-655.000.

Firestone Tire & Rubber Company, The: *See*—
Davis, James A.; and Kang, Jung W., 4,258,770, Cl. 152-330.00R.
Fisher, Thomas W., III, 4,258,567, Cl. 73-146.000.

Fischer, John F.; and Foor, Elton R., to Smith International, Inc. Method for making rock bits. 4,258,807, Cl. 175-375.000.

Fisher, Thomas W., III, to Firestone Tire & Rubber Company, The. Tire sidewall deformity tester and method. 4,258,567, Cl. 73-146.000.

Fisli, Tibor. Process for providing high speed multi-faceted injection molded polygonal scanners employing an adhesion promoting overcoating for substantially applied thin film coatings. 4,259,370, Cl. 427-162.000.

Flack, Frederick C.; Ellis, Richard E.; Bundy, Kenneth; Miners, Francis; and Selley, Wilfred G., to University of Exeter. Device to combat dribbling. 4,258,709, Cl. 128-136.000.

Flagg, Rodger H. Pneumatic collection, storage and transfer of solar heat. 4,258,697, Cl. 126-430.000.

Flanders, Robert L.: *See*—
Blanton, William A.; and Flanders, Robert L., 4,259,176, Cl. 208-120.000.

Fiegel, Vernon; and Anthony, Robert J., to Ultra Carbon Corporation. Method of reshaping warped graphite enclosures and the like. 4,259,278, Cl. 264-81.000.

Flesher, Peter; and Johnson, Ian M., to Allied Colloids Limited. Apparatus and process for mixing or reacting incompletely miscible phases. 4,259,023, Cl. 366-220.000.

Flexible Steel Lacing Company: *See*—
Pray, Winston C., 4,258,461, Cl. 29-243.500.

Flisberg, Gunnar; and Juhlin, Lars-Erik, to ASEA Aktiebolag. High voltage direct current transmission. 4,259,713, Cl. 363-35.000.

Flockenhaus, Claus; and Hackler, Erich, to Didier Engineering GmbH; and Thyssengas GmbH. Process and apparatus for catalytically reacting a reducing gas and water vapor. 4,259,312, Cl. 423-659.000.

Flowers, Edward P., to Medasonics. Strain gauge plethysmograph. 4,258,720, Cl. 128-694.000.

Flowers, William F., to Nalco Chemical Company. Chemical feed system. 4,259,269, Cl. 261-151.000.

FMC Corporation: *See*—
Lochte, Glen E.; and Milberger, Lionel J., 4,258,786, Cl. 166-72.000.

Focke & Co.: *See*—
Focke, Heinz, 4,258,525, Cl. 53-228.000.
Focke, Heinz, 4,258,526, Cl. 53-399.000.
Focke, Heinz, 4,258,528, Cl. 53-473.000.

Focke, Heinz, to Focke & Co. Method and apparatus for wrapping groups of cigarettes. 4,258,525, Cl. 53-228.000.

Focke, Heinz, to Focke & Co. Method and apparatus for bringing articles together in a packaging machine. 4,258,526, Cl. 53-399.000.

Focke, Heinz, to Focke & Co. Method and apparatus for introducing groups of cigarettes into a packet and folding wrapper flaps. 4,258,528, Cl. 53-473.000.

Fohl, Artur; Honl, Wolf-Dieter; and Seifert, Helmut, to REPA Feinstanzwerk GmbH. Safety belt roll-up device. 4,258,887, Cl. 242-107.40A.

Foley, James W., to Polaroid Corporation. Perhalomethylcarbinol-substituted phenol and naphthol sulfamphthaleins. 4,259,493, Cl. 546-96.000.

Foley, James W.: *See*—
Bloom, Stanley M.; Borror, Alan L.; and Foley, James W., 4,259,498, Cl. 548-207.000.
Folland Corporation: *See*—
Folland, Roy E., 4,259,022, Cl. 366-152.000.
Folland, Roy E., to Folland Corporation. Fuel producing system for solid/liquid mixtures. 4,259,022, Cl. 366-152.000.
Fontaine, Gerard O., to Checon Corporation. In line ultrasonic inspection apparatus and method. 4,258,573, Cl. 73-621.000.
Foor, Elton R.: *See*—
Fischer, John F.; and Foor, Elton R., 4,258,807, Cl. 175-375.000.
Force, Carlton G., to Westvaco Corporation. Treatment of latex emulsifiers. 4,259,459, Cl. 525-154.000.
Ford Motor Company: *See*—
Chattha, Mohinder S.; and Van Oene, Henk, 4,259,472, Cl. 528-72.000.
Edelman, Brian S.; and Robinson, Ralph L., Jr., 4,259,719, Cl. 364-200.000.
Gable, Melvin G., 4,259,663, Cl. 340-147.0LP.
Mauch, Jerry L.; and Aula, Howard A., 4,258,687, Cl. 123-570.000.
Moore, Thomas S.; and Smith, Terrence, 4,258,932, Cl. 280-781.000.
Forest Fuels, Inc.: *See*—
Caughey, Robert A., 4,258,476, Cl. 34-174.000.
Fortier, Richard C.: *See*—
Leon, Gonzalo S.; and Fortier, Richard C., 4,259,181, Cl. 209-231.000.
Foster Wheeler Energy Corporation: *See*—
Steiner, Peter, 4,259,304, Cl. 423-244.000.
Fox, Colin H. J.; and Burdess, James S., to National Research Development Corporation. Gyroscopic apparatus. 4,258,577, Cl. 74-5.60R.
Fox, Jeffrey R.; Margolies, Arthur; and Moolenbeek, Rob, to GTE Laboratories Incorporated. Electrical power supply apparatus. 4,259,594, Cl. 307-141.000.
Frame, William R.: *See*—
Bisbing, Robert H.; and Frame, William R., 4,258,596, Cl. 81-436.000.
Framil, Armando R.: *See*—
Figueredo, Fernando; Valdes, Guillermo A.; and Framil, Armando R., 4,258,763, Cl. 144-34.00R.
Frank, David S.; and Sundberg, Michael W., to Eastman Kodak Company. Fluorescent labels. 4,259,313, Cl. 424-8.000.
Frank, Lee F., to Eastman Kodak Company. Light discrimination apparatus. 4,258,993, Cl. 354-60.00A.
Franke, Wolfgang, to Braun Aktiengesellschaft. Front-loading cassette tape machine. 4,259,702, Cl. 360-96.500.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See*—
Theurer, Josef; and Brunninger, Manfred, 4,258,626, Cl. 104-6.000.
Theurer, Josef, 4,258,627, Cl. 104-12.000.
Franzen, Jochen: *See*—
Brunnee, Curt; Franzen, Jochen; and Meier, Stefan, 4,259,572, Cl. 250-281.000.
Franzon, Hans A.; Gustafsson, Jan K.; and Nilsson, Per-Erik, to AB Bofors. Electric mass and force measuring apparatus. 4,258,811, Cl. 177-200.000.
Frederickson, Robert C. A.: *See*—
Smithwick, Jr. Edward L.; Frederickson, Robert C. A.; and Shuman, Robert T., 4,259,234, Cl. 260-112.50R.
French, David W.: *See*—
Rodrigo, Peter; Whalen, Kemener J.; and French, David W., 4,258,935, Cl. 285-21.000.
Frese, Albert: *See*—
Dittmann, Walter; Frese, Albert; Hahmann, Otto; Plenikowski, Johannes; and Klawitter, Helmut, 4,259,410, Cl. 428-461.000.
Freyssinet International: *See*—
Xercavins, M. Pierre, 4,258,518, Cl. 52-223.00L.
Fricker, Peter; Leyendecker, Kuno; Scharl, Jurgen; Wagner, Helmut; Wunsch, Horst; and Scholz, Manfred, to Kraftwerk Union Aktiengesellschaft; and Grunzweig & Hartmann und Glasfaser AG. Metal foil insulation, especially for nuclear reactor installations. 4,258,521, Cl. 52-406.000.
Friebe, Bernhard H.: *See*—
Koch, Peter H.; and Friebe, Bernhard H., 4,259,677, Cl. 346-124.000.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See*—
Jurgens, Arnold; Koopmann, Herbert; and Schwarz, Wilhelm, 4,258,571, Cl. 73-425.40R.
Friedrich Grohe Armaturenfabrik GmbH & Co.: *See*—
Humpert, Jurgen, 4,258,751, Cl. 137-625.400.
Orszullok, Willy, 4,258,444, Cl. 4-538.000.
Fritz, DeWayne A., to Regal Ware, Inc. Paint striper. 4,258,657, Cl. 118-710.000.
Froelich, Leo: *See*—
Pris, Harold C.; and Froelich, Leo, 4,258,660, Cl. 119-1.000.
Froot, Howard A.: *See*—
Carr, Timothy W.; and Froot, Howard A., 4,259,574, Cl. 250-302.000.
Fruitstone, Mitchell J.; Tilly, Michele M.; and Pixton, Betty G., to American Hospital Supply Corporation. Suspending medium for immunologic reactions. 4,259,207, Cl. 252-408.000.
Frungel, Frank; and Spies, Martin, to Frungel, Frank. Ceilometric method and apparatus. 4,259,592, Cl. 250-574.000.
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, to Hoffmann-La Roche Inc. Triazole intermediates for triazolobenzazepines. 4,259,503, Cl. 548-255.000.
Frymaster Corporation, The: *See*—
Moore, L. Frank; and Price, George M., 4,259,567, Cl. 219-327.000.
Fuchigami, Nobuhisa: *See*—
Yukuta, Toshio; Yagura, Kazuo; and Fuchigami, Nobuhisa, 4,259,452, Cl. 521-52.000.
Fuchs, Gerhard: *See*—
Elsner, Emil A.; Ameling, Dieter C.; Assenmacher, Rolf; and Fuchs, Gerhard, 4,259,539, Cl. 13-32.000.
Fuchs, Werner: *See*—
Platz, Rolf; Fuchs, Werner; Rieber, Norbert; Jung, Johann; and Wuerzer, Bruno, 4,259,235, Cl. 260-152.000.
Fudge, David C., to Bio-Dynamics, Inc. Sealing connector for liquid and gas systems. 4,258,940, Cl. 285-137.00R.
Fuji Jukogyo Kabushiki Kaisha: *See*—
Matsuno, Isao; and Yamazoe, Hisamitsu, 4,258,686, Cl. 123-568.000.
Fuji Photo Film Co., Ltd.: *See*—
Akao, Mutsuo; Kashiwagi, Kenzo; and Inoue, Koji, 4,258,848, Cl. 206-524.200.
Kondoh, Syunichi; Matsufuji, Akihiro; Ohara, Yuji; and Umehara, Akira, 4,259,432, Cl. 430-281.000.
Mizobuchi, Yuzo; Sato, Masamichi; and Takahashi, Tsunehiko, 4,259,433, Cl. 430-296.000.
Suzuki, Masaaki, 4,259,392, Cl. 428-212.000.
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Fujino, Toru: *See*—
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Fujisawa, Hideya; Omori, Norio; Yamazoe, Hisamitsu; and Yoshida, Matuju, to Nippondenso Co., Ltd. Method for controlling operations of a combustion engine. 4,259,723, Cl. 364-431.000.
Fujitsu Limited: *See*—
Orihara, Shobu; Iwasa, Seiichi; and Kinoshita, Ryoichi, 4,259,727, Cl. 365-16.000.
Fukahori, Hidehiko; Iwashita, Tomonori; and Mashimo, Yukio, to Canon Kabushiki Kaisha. Camera and electric motor drive therefor. 4,258,997, Cl. 354-173.000.
Fukuda, Minoru: *See*—
Yasui, Tokumasa; Fukuda, Minoru; and Shirasu, Tatsumi, 4,258,465, Cl. 29-571.000.
Fukui, Yoshiharu: *See*—
Shiga, Akinobu; Kakugo, Masahiro; Fukui, Yoshiharu; Yamada, Koji; Sadatoshi, Hajime; Wakamatsu, Kazuki; and Yoshioka, Hiroshi, 4,259,461, Cl. 525-247.000.
Fukuoka, Norio, to Olympus Optical Co., Ltd. Tuning indicator circuit. 4,259,745, Cl. 455-159.000.
Fulgoni, Jean-Claude. Method for permanent waving and means for practicing this method. 4,258,733, Cl. 132-43.00A.
Fumagalli, Angelo: *See*—
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,259,244, Cl. 260-346.220.
Funke, Hermann: *See*—
Baumgartl, Wilhelm; Funke, Hermann; Reiff, Ulrich; and Scheier, Franz, 4,259,285, Cl. 264-284.000.
Furuno Electric Co. Ltd.: *See*—
Tanigaki, Hidetoshi, 4,259,669, Cl. 343-5.0EM.
Fusselman, Robert M.; and Terlecki, Leo, to GF Business Equipment, Inc. Adjustable desk. 4,258,963, Cl. 312-194.000.
Fuzimori, Toru: *See*—
Uchiyama, Masami; Fuzimori, Toru; and Mori, Toshio, 4,259,603, Cl. 310-68.00B.
Gable, Melvin G., to Ford Motor Company. Contention interference detection by comparison of transmitted and received signal information. 4,259,663, Cl. 340-147.0LP.
Gaeddert, Melvin V., to Hesston Corporation. Rotary baler having bale-ejecting apparatus. 4,258,619, Cl. 100-88.000.
GAF Corporation: *See*—
Barabas, Eugene S., 4,259,465, Cl. 526-65.000.
Chakrabarti, Paritosh M.; Wood, Lindley S.; and Tracy, David J., 4,259,474, Cl. 528-388.000.
Gaida, Wolfram: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; Pichler, Ludwig; Hoefke, Wolfgang; and Gaida, Wolfram, 4,259,346, Cl. 424-273.00R.
Gakken Co., Ltd.: *See*—
Ishiyama, Shozo, 4,258,477, Cl. 434-202.000.
Gale, Sidney T. G.; and Spreutels, Paula J. J., to s.a. Texaco Belgium n.v. Process for the separation of n-paraffins from hydrocarbon oils. 4,259,169, Cl. 208-25.000.
Gall, Ralph J.: *See*—
Jaszka, Daniel J.; Gall, Ralph J.; and Roseman, Garry R., 4,259,149, Cl. 162-29.000.
Gamo, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device. 4,259,682, Cl. 357-55.000.
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., to Farmitalia Carlo Erba S.p.A. Certain 13,14-didehydro-PGI$_1$ compounds. 4,259,244, Cl. 260-346.220.
Gans, Michael J.: *See*—
Dragone, Corrado; and Gans, Michael J., 4,259,674, Cl. 343-909.000.
Ganz, Ulrich W.; and Topness, Paul C., to Boeing Company, The. Inflow turbulence control structure. 4,258,823, Cl. 181-214.000.
Garcia, Ildefonso. Bow-ram. 4,258,447, Cl. 7-146.000.

Garlock Inc.: *See*—
Cather, Douglas A., Jr., 4,258,927, Cl. 277-152.000.
Garman, Duane F.: *See*—
Walters, Noel E.; Markey, William F.; and Garman, Duane F., 4,258,776, Cl. 152-361.00R.
Garrett, Robert A.: *See*—
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Garwood, William E.: *See*—
Chen, Nai Y.; and Garwood, William E., 4,259,174, Cl. 208-111.000.
Gates Rubber Company, The: *See*—
Uba, Toshio; and Juergens, Tristan D., 4,259,419, Cl. 429-174.000.
Gause, Dieter; Wolf, Theo; and Fell, Wolfgang, to Robert Bosch GmbH. Apparatus for recording and reproducing information on magnetic tape. 4,259,700, Cl. 360-95.000.
Gayral, Jean-Pierre, to Laboratoire de Recherche Api S.A.R.L. Process of rapid identification of bacteria of the genus Streptococcus. 4,259,442, Cl. 435-36.000.
Gazard, Maryse: *See*—
Eranian, Armand; Dubois, Jean-Claude; Gazard, Maryse; and Barre, Francoise, 4,259,162, Cl. 204-159.160.
Geary, John M.; and Mattes, Hans G., to Bell Telephone Laboratories, Incorporated. Ferroelectric analog device. 4,259,728, Cl. 365-45.000.
Geary, Joseph M., to United States of America, Air Force. Waveguide line spread function analyzing apparatus. 4,259,579, Cl. 250-368.000.
Gebhart, Daniel E.; Smith, Brace C.; Young, D. Craig; and Damerell, Jerry A., to Caterpillar Tractor Co. Dual fluid fuel nozzle. 4,258,544, Cl. 60-39.320.
Gebroeders van Dijk B.V.: *See*—
van Dijk, Hendrikus J. M., 4,258,766, Cl. 100-295.000.
Gelman, Alan H. Socket wrench ejector. 4,258,597, Cl. 81-184.000.
Gem Manufacturing, Inc.: *See*—
Roberts, Russell J.; and Leisner, Kenneth F., 4,258,907, Cl. 269-69.000.
General Binding Corporation: *See*—
Giulie, Joe D.; and Reiss, Robert J., 4,259,143, Cl. 156-499.000.
General Electric Company: *See*—
Adler, Michael S.; and Temple, Victor A. K., 4,259,683, Cl. 357-64.000.
Anderson, Rodger O., 4,259,037, Cl. 416-96.00R.
Andrews, Edward W.; Blake, James E.; and Lambert, Thomas W., 4,259,725, Cl. 364-521.000.
Balchunas, Charles A., 4,259,655, Cl. 337-361.000.
Bovenkerk, Harold P., 4,259,090, Cl. 51-309.000.
Chakrabarty, Ananda M., 4,259,444, Cl. 435-172.000.
Crivello, James V., 4,259,454, Cl. 521-113.000.
Hamann, John R., 4,259,704, Cl. 361-16.000.
Harris, James E.; McFadyen, Robert J.; Peil, William; and Schmitz, Nicholas A., 4,259,716, Cl. 363-97.000.
Pauze, Denis R., 4,259,221, Cl. 260-29.20N.
Slater, Gary L., 4,258,545, Cl. 60-226.00R.
Smearing, Robert W., 4,259,228, Cl. 260-40.00R.
Tiemann, Jerome J., 4,259,596, Cl. 307-221.00D.
Tiemann, Jerome J., 4,259,597, Cl. 307-221.00D.
Tiemann, Jerome J.; and Engeler, William E., 4,259,598, Cl. 307-221.00D.
Vodicka, Vincent, 4,259,712, Cl. 362-310.000.
General Engineering Company (Radcliffe) Limited, The: *See*—
Hill, Alan H., 4,259,277, Cl. 264-75.000.
General Kinematics Corporation: *See*—
Musschoot, Albert, 4,258,779, Cl. 165-1.000.
General Motors Corporation: *See*—
Faxvog, Frederick R.; and Lewis, Robert W., 4,259,013, Cl. 356-237.000.
Hall, Arthur, III; and Leet, Warren E., 4,258,548, Cl. 60-445.000.
Hinkle, Stanley J.; and Dildine, Dean M., 4,258,550, Cl. 60-599.000.
Jessop, Michael E., 4,258,560, Cl. 70-252.000.
Johnson, James J., 4,258,983, Cl. 350-307.000.
Loper, Edward J., Jr., 4,258,572, Cl. 73-497.000.
Ryker, John; and Gillespie, Kenneth D., 4,258,552, Cl. 60-711.000.
General Signal Corporation: *See*—
Tehan, James F.; and Bradley, Robert L., 4,259,542, Cl. 174-48.000.
General Steel Industries, Inc.: *See*—
Jackson, Keith L.; Reece, James J.; and Spencer, Kenneth E., 4,258,629, Cl. 105-167.000.
General Tire & Rubber Company, The: *See*—
van Gils, Gerard E., 4,259,404, Cl. 428-395.000.
Genese, Joseph N.: *See*—
Harms, Jack L.; Genese, Joseph N.; and Muetterties, Andrew J., 4,258,712, Cl. 128-214.00G.
Gentile, Giulio. Articulated positioning system for devices adapted to externally exert a holding action on bone tissues. 4,258,708, Cl. 128-92.00A.
Gerest, Pierre: *See*—
Boeuf, Jean-Marie; Gerest, Pierre; and Lemaire, Henri, 4,259,197, Cl. 252-62.580.
Gerst, Thomas L., to 21st Century Products. Log splitting machine. 4,258,764, Cl. 144-193.00R.
GF Business Equipment, Inc.: *See*—
Fusselman, Robert M.; and Terlecki, Leo, 4,258,963, Cl. 312-194.000.
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Gill, Stephen H.; and Hogg, Theodore B., to Caterpillar Tractor Co. Extensible boom for cranes. 4,258,853, Cl. 212-264.000.
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Giraudon, Raymond, to Philagro. New 3-ureido-(thio)-chromone derivatives. 4,259,506, Cl. 549-23.000.
Giulie, Joe D.; and Reiss, Robert J., to General Binding Corporation. Laminating machine. 4,259,143, Cl. 156-499.000.
Gladrow, Elroy M.; Winter, William E.; and Schuette, William L., to Exxon Research and Engineering Co. Octane improvement cracking catalyst. 4,259,212, Cl. 252-455.00Z.
Glaser, Fritz; Gortz, Christoph; Buhler, Kurt K.; Klimmer, Josef W.; Laberheim, Rene; Pauli, Klaus H.; and Velten, Werner, to Deere & Company. Adjustable guide vanes for an axial flow rotary separator. 4,258,726, Cl. 130-27.00L.
Glass, Richard W.; and Glogowski, Joseph, to CPC International. Immobilized enzyme catalyst. 4,259,445, Cl. 435-178.000.
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Goble, Paul H., to Diamond Shamrock Corporation. Radiation cross-linked acrylamide polymer compositions and shaped articles therefrom. 4,258,715, Cl. 128-283.000.
Godard, Bruno, to Societe Anonyme dite: Compagnie Generale d'Electricite. Device for producing an electric discharge in a flat-plate transmission line. 4,259,617, Cl. 315-326.000.
Goettert, Edward J.; and Tiers, George V. D., to Minnesota Mining and Manufacturing Company. Depositing latent fingerprints and development thereof. 4,258,644, Cl. 118-31.500.
Gof, M. Shamel. Pedal plow. 4,258,485, Cl. 37-41.000.
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Goldman, Michael D. Measuring respiratory air volume. 4,258,718, Cl. 128-653.000.
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Gordon, Gerald A., to Continental Group, Inc., The. Adhesive application of two-part container. 4,258,855, Cl. 220-8.000.
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Greenberg, Jerome S., to Regal China Corporation. Method of casting in molds for the production of ceramic hollowware. 4,259,279, Cl. 264-86.000.
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Grubb, Frederick H., Jr., to Acme Visible Records, Inc. Bearing system and locking mechanism for rotary storage cabinet. 4,258,966, Cl. 312-305.000.
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Fox, Jeffrey R.; Margolies, Arthur; and Moolenbeek, Rob, 4,259,594, Cl. 307-141.000.
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Smith, Gerald T., 4,259,616, Cl. 315-256.000.
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Gupta, Surendra K.; and Chaudhari, Panna R., to Miles Laboratories, Inc. Hydrolysis and assay of triglycerides. 4,259,440, Cl. 435-15.000.
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Haegele, Gerhard; and Knoedler, Helmut, to Zahnradfabrik Friedrichshafen, AG. Ball circulation screw gear. 4,258,584, Cl. 74-424.80R.
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Hale, Billy W., to Western Company of North America, The. Well cementing method using low fluid–loss cement slurry. 4,258,790, Cl. 166-293.000.

Hall, Arthur, III; and Leet, Warren E., to General Motors Corporation. Hydrostatic transmission and controls. 4,258,548, Cl. 60-445.000.

Hall, John B.: *See*—
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Hamann, John R., to General Electric Company. Protective circuit for zinc oxide varistors. 4,259,704, Cl. 361-16.000.

Hammond, Leonard A. Framing structure for a flexible pane. 4,258,517, Cl. 52-202.000.

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Hanamoto, Max M.; and Bean, Maura M., to United States of America, Agriculture. Process for improving baking properties of unbleached flour. 4,259,362, Cl. 426-622.000.

Hanaoka, Seiji; Mori, Masahiko; and Kobayashi, Takao, to Kabushiki Kaisha Suwa Seikosha; and Shinshu Seiki Kabushiki Kaisha. Dot printer having concentric driving cams. 4,259,026, Cl. 400-124.000.

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Harmel, Norman A., to Western Electric Company, Inc. Fine-resolution, water-depth measuring system. 4,259,734, Cl. 367-101.000.

Harms, Jack L.; Genese, Joseph N.; and Muetterties, Andrew J., to Abbott Laboratories. Equipment sets having a pilot liquid controlled primary tube valve for the sequential administration of medical liquids at dual flow rates. 4,258,712, Cl. 128-214.00G.

Harnischfeger Corporation: *See*—
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Harper, James M. E.; and Kaufman, Harold R., to International Business Machines Corporation. Ion source for reactive ion etching. 4,259,145, Cl. 156-643.000.

Harrington, Duane E. Paper wiring apparatus. 4,259,140, Cl. 156-438.000.

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Harris, James E.; McFadyen, Robert J.; Peil, William; and Schmitz, Nicholas A., to General Electric Company. Transformer for use in a static inverter. 4,259,716, Cl. 363-97.000.

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Hasegawa, Ryusuke, to Allied Chemical Corporation. Beryllium-containing iron-boron glassy magnetic alloys. 4,259,109, Cl. 75-123.00B.

Hasegawa, Tetsuo; Kato, Shigeo; and Nishikawa, Yoshihiro, to Canon Kabushiki Kaisha. Pressure fixable microcapsule toner and electrostatic image developing method. 4,259,426, Cl. 430-98.000.

Hata, Toshio. Constant torque ball joint. 4,259,027, Cl. 403-132.000.

Hatakeyama, Akira; Matsuyama, Atsuo; and Moritake, Yutaka, to Sony Corporation. Rotational direction indicating apparatus. 4,259,625, Cl. 318-328.000.

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Hauri, Bernhard, to Kern & Co. AG. Apparatus for measuring and evaluating a picture plate. 4,259,010, Cl. 356-2.000.

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Hawley, Royal T.; Kalyan, Jagdish C.; Rogers, Alvin D.; and Sheppard, Monte G., to Western Gear Corporation. Winding system for flexible conduits and cables. 4,258,834, Cl. 191-12.20R.

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Hayden, Robert K. High voltage safety-glow insulator. 4,259,545, Cl. 174-139.000.

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Hebel, Rudolf: *See*—
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Hehlo, Lloyd G. Personal care appliance. 4,258,734, Cl. 132-74.500.

Heiko Seisakusho, Ltd.: *See*—
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Heinrich, William P.: *See*—
Leopoldi, Norbert; and Heinrich, William P., 4,258,714, Cl. 128-232.000.

Heja, Gergely: *See*—
Gonczi, Csaba; Korbonits, Dezso; Kiss, Pal; Palosi, Endre; Heja, Gergely; Szvoboda nee Kanzel, Ida; Cser nee Kun, Judit; Szomor nee Wundele, Maria; Kormoczi, Gyorgy; and Kelemen, Andras, 4,259,344, Cl. 424-273.00B.

Hejdanek, Slavomil: *See*—
Vesely, Dasa; and Hejdanek, Slavomil, 4,259,317, Cl. 424-93.000.

Hekimian, Guy: *See*—
Aaron, Gilles; and Hekimian, Guy, 4,259,693, Cl. 358-261.000.

Helletsberger, Harald: *See*—
Waizer, Walter; and Helletsberger, Harald, 4,259,089, Cl. 51-295.000.

Hemschemeier, Hans: *See*—
Dorling, Rolf; and Hemschemeier, Hans, 4,258,781, Cl. 165-67.000.

Hendrix, Donald L.: *See*—
Duhe, Nanda V.; and Hendrix, Donald L., 4,259,318, Cl. 424-94.000.

Hendry, David L.: *See*—
Liskov, Nathan A.; and Hendry, David L., 4,259,738, Cl. 370-102.000.

Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): *See*—
Eschwey, Helmut; and Gorzinski, Manfred, 4,259,219, Cl. 260-22.00A.

Henning Dynesen A/S: *See*—
Dynesen, Henning, 4,259,568, Cl. 235-1.00D.

Hennion, Francis J.; deBarbadillo, John J.; and Ahmad, Umar M. U., to United States of America, Interior. Recovery of chromium from scrap. 4,259,296, Cl. 423-53.000.

Henter, Laszlo: *See*—
Csontos, Peter; Henter, Laszlo; Kalman, Laszlo; Kondor, Tibor; and Wein, Istvan, 4,259,581, Cl. 250-402.000.

Hentschel, Klaus; and Bittner, Friedrich, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of optionally substituted 2-mercapto-4,6-di-chloro-s-triazines. 4,259,487, Cl. 544-218.000.

Herbert Kannegiesser GmbH & Co.: *See*—
Juraschek, Richard, 4,259,380, Cl. 427-428.000.

Herchenbach, Horst: *See—*
Ramesohl, Hubert; Herchenbach, Horst; and Schroder, Karlheinz, 4,259,062, Cl. 432-78.000.
Heredia, R. Victor. Camera grip and flash holder. 4,259,000, Cl. 354-293.000.
Herrmann, Manfred: *See—*
Stoss, Peter; Satzinger, Gerhard; and Herrmann, Manfred, 4,259,494, Cl. 546-202.000.
Herrmann, Walter: *See—*
Krabetz, Richard; Herrmann, Walter; Scholz, Norbert; Engelbach, Heinz; Engert, Gerd-Juergen; Willersinn, Carl-Heinz; Duembgen, Gerd; and Thiessen, Fritz, 4,259,211, Cl. 252-443.000.
Heslam, Robin S.: *See—*
Sims, Peter S.; Heslam, Robin S.; and Morris, Richard L., 4,259,200, Cl. 252-102.000.
Hess, Donald F. Hitching device with safety lock. 4,258,930, Cl. 280-508.000.
Hesston Corporation: *See—*
Gaeddert, Melvin V., 4,258,619, Cl. 100-88.000.
Hetzler, Ullrich: *See—*
Ruppel, Wolfgang; Hetzler, Ullrich; Vogt, Horst; and Wurfel, Peter, 4,259,365, Cl. 427-46.000.
Heuber, Klaus; Klink, Erich; Rudolph, Volker; and Wiedmann, Siegfried K., to International Business Machines Corporation. IIL With partially spaced collars. 4,259,730, Cl. 365-156.000.
Hewlett-Packard Company: *See—*
Leonard, Mark, 4,259,570, Cl. 250-214.00A.
Hicks, Edwin A.: *See—*
Graham, Ronald I.; and Hicks, Edwin A., 4,259,170, Cl. 208-33.000.
Hicks, Harry H. Cable release and latch. 4,258,504, Cl. 49-56.000.
Hidaka, Takayoshi: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Ishizuka, Masaaki; Watanabe, Kiyoshi; Yamashita, Toshiaki; Naoi, Noriyuki; and Hidaka, Takayoshi, 4,259,319, Cl. 424-117.000.
Hidden, William P.; and McCullough, John E., to Arthur D. Little, Inc. Thrust bearing/coupling component for orbiting scroll-type machinery and scroll-type machinery incorporating the same. 4,259,043, Cl. 418-55.000.
Hieber, Konrad: *See—*
Politycki, Alfred; Hieber, Konrad; and Stolz, Manfred, 4,258,658, Cl. 118-719.000.
Hietikko, Calvin N. Variable lift camming apparatus and methods of constructing and utilizing same. 4,258,672, Cl. 123-90.180.
Higbee, Charles D., to Bandag Incorporated. Helical wire reinforced hose. 4,258,755, Cl. 138-122.000.
Hildebrand, B. Percy; and Doctor, S. R., to Electric Power Research Institute. Method and apparatus for ultrasonic imaging using a line source and a linear receiver array. 4,258,574, Cl. 73-625.000.
Hilgendorff, Wayne P. Saddle pack. 4,258,869, Cl. 224-32.00A.
Hill, Alan H., to General Engineering Company (Radcliffe) Limited, The. Method and apparatus for the injection of additives into plastics material. 4,259,277, Cl. 264-75.000.
Hill, Berlie R., to Burlington Industries, Inc. Ultrasonic nonwoven bonding. 4,259,399, Cl. 428-288.000.
Hill, Roger C., to Johnson & Johnson. Body orifice accessory. 4,258,704, Cl. 128-1.00R.
Hinkle, Stanley J.; and Dildine, Dean M., to General Motors Corporation. Engine charging system with dual function charge supplying and charge cooling blower. 4,258,550, Cl. 60-599.000.
Hipp, James, to Petro-Drive, Inc. Hinged conductor casing for deviated driving and method therefor. 4,258,800, Cl. 175-61.000.
Hirabayashi, Masaya; and Kawahara, Haruyuki, to Kyoto Ceramic Co., Ltd. Ceramic endosseous implant. 4,259,072, Cl. 433-173.000.
Hirose, Kenji: *See—*
Iwakane, Takanobu; Kai, Tohru; Hirose, Kenji; and Nakagawa, Koichiro, 4,259,628, Cl. 318-799.000.
Hirose, Ryusho: *See—*
Tokuhara, Mitsuhiro; Sueda, Tetsuo; Tanaka, Kazuo; and Hirose, Ryusho, 4,259,688, Cl. 358-107.000.
Hitachi Chemical Co. Ltd.: *See—*
Tamura, Kohki; Kahara, Toshiki; Horiba, Tatsuo; Ebato, Noboru; and Asai, Osamu, 4,259,415, Cl. 429-90.000.
Hitachi, Ltd.: *See—*
Kaneko, Yoichi; Sekine, Kenji; Hase, Eiichi; and Endo, Akira, 4,259,743, Cl. 455-81.000.
Niino, Tuyoshi; and Uchiyama, Yuichi, 4,259,154, Cl. 176-38.000.
Tamura, Kohki; Kahara, Toshiki; Horiba, Tatsuo; Ebato, Noboru; and Asai, Osamu, 4,259,415, Cl. 429-90.000.
Tsukuda, Yasuo; Imoto, Katsuyuki; Susa, Kenzo; Matsuyama, Iwao; and Suganuma, Tsuneo, 4,259,101, Cl. 65-18.000.
Yasui, Tokumasa; Fukuda, Minoru; and Shirasu, Tatsumi, 4,258,465, Cl. 29-571.000.
Hitchcock, Lloyd. Fire retardant siloxane foams and method for preparation. 4,259,455, Cl. 521-122.000.
Hoback, Roy W.: *See—*
Blankenship, John E.; and Hoback, Roy W., 4,258,739, Cl. 137-71.000.
Hoeberechts, Arthur M. E.: *See—*
van Gorkom, Gerardus G. P.; and Hoeberechts, Arthur M. E., 4,259,678, Cl. 357-13.000.
Hoechst Aktiengesellschaft: *See—*
Baumgartl, Wilhelm; Funke, Hermann; Reiff, Ulrich; and Scheier, Franz, 4,259,285, Cl. 264-284.000.
Dalibor, Horst; Kiessling, Hans-Joachim; and Quednau, Peter, 4,259,224, Cl. 260-31.2XA.
Kleber, Rolf; and Muller, Heinz, 4,259,078, Cl. 8-115.600.
Hoefke, Wolfgang: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; Pichler, Ludwig; Hoefke, Wolfgang; and Gaida, Wolfram, 4,259,346, Cl. 424-273.00R.
Hofer, Friedrich-Wilhelm: *See—*
Maucher, Edmund; Hofer, Friedrich-Wilhelm; and Schwerin, Gunther, 4,258,610, Cl. 91-445.000.
Hoffmann, George T., to Alkron Manufacturing Corp. Rotating guide bushing for Swiss-type automatic screw machine. 4,258,598, Cl. 82-38.00R.
Hoffmann, Herwig: *See—*
Huchler, Otto H.; Mesch, Walter; Winderl, Siegfried; Mueller, Herbert; and Hoffmann, Herwig, 4,259,531, Cl. 568-617.000.
Hoffmann-La Roche Inc.: *See—*
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,259,503, Cl. 548-255.000.
Ranucci, Joseph A., 4,259,323, Cl. 424-153.000.
Walser, Armin, 4,259,241, Cl. 260-243.300.
Hoffmann, Otto-Horst: *See—*
Aichert, Hans; Stark, Friedrich; Stephan, Herbert; and Hoffmann, Otto-Horst, 4,258,645, Cl. 118-50.000.
Hoffmann, Thomas M. Roofer's bundle tool. 4,258,948, Cl. 294-26.000.
Hofmann, Karl; and Norberg, Helmut, to Robert Bosch GmbH. Fuel injection nozzle. 4,258,883, Cl. 239-124.000.
Hogg, Theodore B.: *See—*
Gill, Stephen H.; and Hogg, Theodore B., 4,258,853, Cl. 212-264.000.
Hogue, Amos F. Protective device for spiked athletic shoes. 4,258,483, Cl. 36-135.000.
Hoh, Rainer: *See—*
Vogt, Peter; and Hoh, Rainer, 4,258,943, Cl. 285-340.000.
Hohler, Dieter, to Carl Still GmbH & Co. KG, Firma. Method and apparatus for sealing the chambers of coke ovens. 4,259,159, Cl. 202-269.000.
Hohmann, Walter; and Wunderlich, Klaus, to Bayer Aktiengesellschaft. Process for the preparation of mixtures of dinitroanthraquinones with a high content of 1,5- and 1,8- dinitroanthraquinone. 4,259,248, Cl. 260-369.000.
Hohorst, Wolfgang, to Wago-Kontakttechnik GmbH. Marker plate strip for marking multiple terminals. 4,258,487, Cl. 40-2.00R.
Hoitink, Hendrik: *See—*
Buser, Werner; and Hoitink, Hendrik, 4,259,636, Cl. 324-158.00D.
Hokushin Electric Works, Ltd.: *See—*
Miyake, Yoshihiro, 4,259,165, Cl. 204-195.00P.
Hollaway, Gerald C., Jr., to Dayco Corporation. Emergency drive belt and method for making the same. 4,258,582, Cl. 474-254.000.
Holt, Kenneth M. Generator adaptor. 4,258,968, Cl. 339-14.00L.
Homma, Itomi, to Kao Soap Co., Ltd. Shampoo composition. 4,259,204, Cl. 252-174.160.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Miura, Tatsuhiko; Toyoshima, Takefumi; Kikuchi, Kazuo; and Masaki, Akio, 4,258,820, Cl. 180-295.000.
Honda, Masaki: *See—*
Takahashi, Shigeru; Ohshima, Iwao; Honda, Masaki; and Yamashita, Mizuho, 4,259,666, Cl. 340-647.000.
Honl, Wolf-Dieter: *See—*
Fohl, Artur; Honl, Wolf-Dieter; and Seifert, Helmut, 4,258,887, Cl. 242-107.40A.
Hooker Chemicals & Plastics Corp.: *See—*
Jaszka, Daniel J.; Gall, Ralph J.; and Roseman, Garry R., 4,259,149, Cl. 162-29.000.
Hori, Shozo: *See—*
Nakano, Tatsuo; Hori, Shozo; and Kishi, Ikuji, 4,259,462, Cl. 525-263.000.
Horiba, Tatsuo: *See—*
Tamura, Kohki; Kahara, Toshiki; Horiba, Tatsuo; Ebato, Noboru; and Asai, Osamu, 4,259,415, Cl. 429-90.000.
Horning, Frederick G.; Pozniko, John M.; and Welch, Karl H., to Salem Tool Company, The. Earth drilling apparatus. 4,258,796, Cl. 175-52.000.
Hosaka, Kazuo: *See—*
Ishikawa, Kazuo; and Hosaka, Kazuo, 4,259,657, Cl. 338-22.00R.
Houlgrave, Robert C.: *See—*
Dare, Roy R.; Houlgrave, Robert C.; and Shelton, William S., 4,258,743, Cl. 137-327.000.
Housley Kimmich Company: *See—*
Elderfield, Raymond N., 4,258,633, Cl. 110-182.500.
Houston Systems Manufacturing Co.: *See—*
Belveal, Robert E., 4,259,182, Cl. 210-629.000.
Hoveler, Egon, to Jagenberg-Werke Aktiengesellschaft. Device for pressing labels or foils onto objects. 4,259,132, Cl. 156-215.000.
Hubert Sohler GmbH: *See—*
Sohler, Manfred, 4,258,450, Cl. 15-312.00A.
Huchler, Otto H.; Mesch, Walter; Winderl, Siegfried; Mueller, Herbert; and Hoffmann, Herwig, to BASF Aktiengesellschaft. Polymerization of tetrahydrofuran to prepare polytetramethylene ether glycols. 4,259,531, Cl. 568-617.000.
Hudson, George D. Float valve with variable liquid ballast. 4,258,746, Cl. 137-414.000.
Huelle, Zbigniew R.; and Nielsen, Leif, to Danfoss A/S. Actuating apparatus for adjusting a movable element, particularly the closure member of a valve. 4,258,899, Cl. 251-11.000.
Hugens, Andrew. Means for joining panels. 4,258,519, Cl. 52-282.000.
Hughes Aircraft Company: *See—*
Lewyn, Lanny L., 4,258,719, Cl. 128-690.000.

Hughes, James K.; and Erickson, Wayne K., to Phillips Petroleum Company. Method for coating and crimping synthetic thermoplastic. 4,258,457, Cl. 28-221.000.
Hugon, Pierre: *See—*
Beregi, Laszlo; Hugon, Pierre; Bure, Jacques; and Degrand, Francoise, 4,259,335, Cl. 424-258.000.
Hull, Michael N.: *See—*
Clark, William D. K.; Hull, Michael N.; and Arms, John T., 4,259,418, Cl. 429-111.000.
Hulme, Joseph M.; and Thibodeau, William E., to Polysar Limited. Polymer characterization apparatus. 4,258,564, Cl. 73-61.10C.
Humpert, Jurgen, to Friedrich Grohe Armaturenfabrik GmbH & Co. Slide plate for valves. 4,258,751, Cl. 137-625.400.
Hunner, Manfred: *See—*
Peehs, Martin; and Hunner, Manfred, 4,259,155, Cl. 176-78.000.
Hunt, James, to Boeing Company, The. Method and apparatus for laminar flow control. 4,258,889, Cl. 244-207.000.
Hunt, Rowland D. Method of installing, and retaining, skirt segments on an air cushion vehicle, and means therefore. 4,258,817, Cl. 180-127.000.
Husges, Gerd; and Mayer, Walter, to Schubert & Salzer. Controllable thread extractor device with an air passage connected to a vacuum source. 4,258,872, Cl. 226-91.000.
Husky Injection Molding Systems Limited: *See—*
Rees, Herbert; and Schad, Robert D., 4,259,056, Cl. 425-533.000.
Huszti, Zsuzsa: *See—*
Szilagyi, Geza; Kasztreiner, Endre; Kosary, Judit; Matyus, Peter; Huszti, Zsuzsa; Cseh, Gyorgy; Kenessey, Agnes; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, 4,259,328, Cl. 424-248.530.
Huwelmann, Helmut: *See—*
Tetenborg, Konrad; and Huwelmann, Helmut, 4,258,524, Cl. 53-137.000.
Huyck Corporation: *See—*
Khan, Abdul Q., 4,259,394, Cl. 428-229.000.
Hvezda, Jaroslav M.: *See—*
Lukas, Helmut H.; Hvezda, Jaroslav M.; and Dalgleish, Jack F., 4,258,977, Cl. 350-96.210.
Hwang, Mei H.: *See—*
Windhager, Robert H.; and Hwang, Mei H., 4,259,411, Cl. 428-511.000.
Ibl, Stanislav: *See—*
Kamenicky, Jan; Michl, Jan; Sindelar, Zdenek; Ibl, Stanislav; and Salivar, Jaroslav, 4,259,622, Cl. 318-86.000.
Ichinose, Noboru; Okuma, Hideo; Yokomizo, Yuji; Takahashi, Takashi; Nishihara, Mieko; and Katsura, Masaki, to Tokyo Shibaura Electric Co., Ltd. Gas detecting element. 4,259,292, Cl. 422-98.000.
Ideal Corporation: *See—*
Viola, Frank J., 4,258,942, Cl. 285-245.000.
IDN Inventions and Development of Novelties AG: *See—*
Ackeret, Peter, 4,258,961, Cl. 312-111.000.
Igarashi, Isao: *See—*
Noguchi, Masaaki; Tanaka, Yukiyasu; and Igarashi, Isao, 4,258,669, Cl. 123-51.0BA.
Ignasiak, Boleslaw, to Alberta Research Council. Production of metallurgical coke from oxidized caking coal. 4,259,083, Cl. 44-1.00F.
Ignatiev, Vladimir V.: *See—*
Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladimir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K., 4,259,658, Cl. 340-26.000.
Ihrig, Hanns: *See—*
Benedikter, Lothar; Kobinger, Walter; Pichler, Ludwig; Ihrig, Hanns; and Griss, Gerhart, 4,259,342, Cl. 424-270.000.
Iida, Tetsuya: *See—*
Suzuki, Yasoji; and Iida, Tetsuya, 4,259,686, Cl. 307-262.000.
Iimura, Takashi, to Trio Kabushiki Kaisha. Local oscillator for multiband reception having single crystal reference oscillator. 4,259,644, Cl. 331-2.000.
Ikawa, Shukuko: *See—*
Ando, Tadahiko; Shibata, Takehiko; Hayase, Eiji; and Ikawa, Shukuko, 4,259,446, Cl. 435-199.000.
Ikeda, Atsuo: *See—*
Kuribayashi, Hiroshi; and Ikeda, Atsuo, 4,259,602, Cl. 310-12.000.
Ikeda, Hironosuke; Noda, Shigeaki; and Yoshida, Seiki, to Sanyo Electric Co., Ltd. Battery. 4,259,416, Cl. 429-94.000.
Illes, Joseph A.: *See—*
Balat, Roger; Illes, Joseph A.; Jacquemart, Jean-Francois V.; and Sarda, Christian, 4,258,724, Cl. 128-785.000.
Illinois Tool Works Inc.: *See—*
Smith, Dennis D., 4,259,656, Cl. 337-407.000.
Imanishi, Shozo; Umezawa, Fumiaki; Ishida, Toshiya; and Nakayama, Harutsugu, to Aida Engineering, Ltd. Transfer press. 4,259,052, Cl. 425-135.000.
Immobile Home Company, The: *See—*
Delk, Charles W.; Brandenburg, Lee H.; and Parish, Edwin J., 4,258,512, Cl. 52-79.700.
Imoto, Katsuyuki: *See—*
Tsukuda, Yasuo; Imoto, Katsuyuki; Susa, Kenzo; Matsuyama, Iwao; and Suganuma, Tsuneo, 4,259,101, Cl. 65-18.000.
Imperial Chemical Industries Limited: *See—*
Crosby, John, 4,259,263, Cl. 570-135.000.
Whittaker, Graham, 4,259,496, Cl. 546-345.000.
Inada, Hiroshi: *See—*
Nomura, Tadashi; and Inada, Hiroshi, 4,259,626, Cl. 318-599.000.
Industrie Pirelli S.p.A.: *See—*
Angioletti, Attilio, 4,258,946, Cl. 292-144.000.
Canevari, Cesare; and Tarantola, Luciano, 4,258,543, Cl. 57-212.000.
Lanfranconi, Gianmario; and Vecellio, Bernardino, 4,259,281, Cl. 264-102.000.
Inoue, Koji: *See—*
Akao, Mutsuo; Kashiwagi, Kenzo; and Inoue, Koji, 4,258,848, Cl. 206-524.200.
Inoue, Shunzo: *See—*
Arai, Toshio; Inoue, Shunzo; Kuroda, Yasuo; Kasuya, Michio; Konishi, Motofumi; and Nakamura, Mitsuo, 4,259,007, Cl. 355-27.000.
Institute of Critical Care Medicine: *See—*
Bisera, Jose; Carrington, James H.; and Weil, Max H., 4,258,717, Cl. 128-637.000.
Integral Hydraulic & Co.: *See—*
Arnold, Dieter, 4,259,039, Cl. 417-220.000.
Interbank Card Association: *See—*
Campbell, Carl M., 4,259,720, Cl. 364-200.000.
International Business Machines Corporation: *See—*
Balasubramanian, P. S.; Bertin, Claude L.; and Greenspan, Stephen B., 4,259,366, Cl. 427-88.000.
Canavello, Benjamin J.; and Hatzakis, Michael, 4,259,369, Cl. 427-155.000.
Carr, Timothy W.; and Froot, Howard A., 4,259,574, Cl. 250-302.000.
Dougherty, William E., Jr., 4,259,367, Cl. 427-96.000.
Dubetsky, Derry J., 4,259,061, Cl. 432-13.000.
Harper, James M. E.; and Kaufman, Harold R., 4,259,145, Cl. 156-643.000.
Heuber, Klaus; Klink, Erich; Rudolph, Volker; and Wiedmann, Siegfried K., 4,259,730, Cl. 365-156.000.
Kaplan, Leon H.; and Zimmerman, Steven M., 4,259,430, Cl. 430-191.000.
Pohl, Dieter W.; and Scheel, Hansjoerg, 4,258,647, Cl. 118-52.000.
International Flavors & Fragrances Inc.: *See—*
Marmo, Don; and Rocco, Frank L., 4,259,355, Cl. 426-5.000.
Shu, Chi-Kuen; Mookherjee, Braja D.; and Vock, Manfred H., 4,259,507, Cl. 549-34.000.
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,258,727, Cl. 131-9.000.
Sprecker, Mark A.; Hall, John B.; and Schmitt, Frederick L., 4,259,214, Cl. 252-522.00R.
International Nickel Co., Inc., The: *See—*
Clark, William D. K.; Hull, Michael N.; and Arms, John T., 4,259,418, Cl. 429-111.000.
International Telephone and Telegraph Corporation: *See—*
Donahue, Thomas H., 4,259,650, Cl. 333-166.000.
Oldham, Ronald C., 4,259,543, Cl. 174-70.00S.
Internationale Octrooi Maatschappij "Octropa" B.V.: *See—*
Akers, John B.; and Peters, David C., 4,259,251, Cl. 260-412.500.
Van Kranenburg, Simon, 4,259,357, Cl. 426-42.000.
Ishida, Hiroaki: *See—*
Kitai, Kiyoshi; Nakagawa, Tadashi; and Ishida, Hiroaki, 4,258,988, Cl. 354-25.000.
Ishida, Toshiya: *See—*
Imanishi, Shozo; Umezawa, Fumiaki; Ishida, Toshiya; and Nakayama, Harutsugu, 4,259,052, Cl. 425-135.000.
Ishii, Yoshio: *See—*
Matsushima, Yoshihisa; Sakakibara, Tadamori; Kaneko, Katsumi; Wada, Shozo; Ishii, Yoshio; Nagashima, Yukio; and Okamoto, Nobukazu, 4,259,530, Cl. 568-454.000.
Ishikawa, Hisao: *See—*
Maeda, Kuniyasu; Kaeriyama, Minoru; Matsui, Nobuo; Ishikawa, Hisao; Yamada, Shozo; and Okunuki, Susumu, 4,259,105, Cl. 71-108.000.
Ishikawa, Kazuo; and Hosaka, Kazuo, to Matsushita Electric Industrial Co., Ltd. Self heat generation type positive characteristic thermistor and manufacturing method thereof. 4,259,657, Cl. 338-22.00R.
Ishikawa, Masao; Nakamura, Kenji; and Ajimine, Akio, to Nissan Motor Company, Limited. Illuminated indicator gauge with illuminated pointer. 4,258,643, Cl. 116-286.000.
Ishino, Hiroo: *See—*
Hagiwara, Zenzi; Uenoyama, Iwao; and Ishino, Hiroo, 4,259,299, Cl. 423-210.000.
Ishiyama, Shozo, to Gakken Co., Ltd. Multiplication study device. 4,258,477, Cl. 434-202.000.
Ishizaki, Nobuo: *See—*
Matsuo, Tatsuki; Ishizaki, Nobuo; and Suzuki, Yoichi, 4,259,092, Cl. 55-78.000.
Ishizuka, Masaaki: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Ishizuka, Masaaki; Watanabe, Kiyoshi; Yamashita, Toshiaki; Naoi, Noriyuki; and Hidaka, Takayoshi, 4,259,319, Cl. 424-117.000.
Isomura, Shohei: *See—*
Nakane, Ryohei; Isomura, Shohei; Okita, Koichi; Kamijo, Eiji; and Nishimoto, Tatsuya, 4,259,209, Cl. 252-430.000.
Istituto de Angeli S.p.A.: *See—*
Donetti, Arturo; Cereda, Enzo; and Bellora, Elio, 4,259,253, Cl. 260-418.000.
Ito, Ichizo: *See—*
Sawayama, Takehiro; Ito, Ichizo; Aga, Toshio; and Ando, Tetsuo, 4,258,565, Cl. 73-141.00R.

Itogawa, Zirou: *See—*
Tsujimoto, Susumu; Yamazaki, Hayao; Ozaki, Masayoshi; Kobayashi, Takehiro; Fujino, Toru; Yasuda, Mitsuo; Minami, Katsuji; and Itogawa, Zirou, 4,258,731, Cl. 132-9.000.

Itoh, Hiroshi; Tuchiya, Yoshimasa; and Katayama, Yoshinori, to Nissan Motor Company, Limited. Vehicle body construction and method of obtaining same. 4,258,950, Cl. 296-56.000.

ITT Limited: *See—*
Mougin, Georges L., 4,258,640, Cl. 114-219.000.

Ivankovich, Robert F. Baseboard paint guard. 4,258,654, Cl. 118-504.000.

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Orihara, Shobu; Iwasa, Seiichi; and Kinoshita, Ryoichi, 4,259,727, Cl. 365-16.000.

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Fukahori, Hidehiko; Iwashita, Tomonori; and Mashimo, Yukio, 4,258,997, Cl. 354-173.000.

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Nikitin, Jury E.; Murinov, Jury I.; Leplyanin, Gennady V.; Rafikov, Sagid R.; Bikchurina, Lilia K.; Tolstikov, Genrikh A.; Kazakov, Valery P.; Battalov, Edvard M.; Kolosnitsyn, Vladimir S.; Golodkova, Lyalya N.; Izmailov, Genrikh I.; and Markin, Gennady K., 4,259,229, Cl. 260-42.210.

J. W. Speaker Corp.: *See—*
Speaker, John A., 4,258,971, Cl. 339-52.00S.

Jackson, Edward L. Variable utility chain saw apparatus. 4,258,600, Cl. 83-574.000.

Jackson, Keith L.; Reece, James J.; and Spencer, Kenneth E., to General Steel Industries, Inc. Braking and steering radial truck. 4,258,629, Cl. 105-167.000.

Jackson, Winston J., Jr.; and Kuhfuss, Herbert F., to Eastman Kodak Company. Process for preparing high molecular weight copolyesters. 4,259,478, Cl. 528-307.000.

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Laux, Walter; Hebel, Rudolf; Artelt, Peter; Esfeld, Gerhard; and Jacob, Arnold, 4,259,064, Cl. 432-222.000.

Jacobson, Chester F., to Gillette Company, The. Razor handle. 4,258,471, Cl. 30-89.000.

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Mares, Frank; Jacobson, Stephen E.; and Tang, Reginald T., 4,259,527, Cl. 568-311.000.

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Balat, Roger; Illes, Joseph A.; Jacquemart, Jean-Francois V.; and Sarda, Christian, 4,258,724, Cl. 128-785.000.

Jaeckh, Christof: *See—*
Rudolf, Peter; Steck, Werner; Sarnecki, Wilhelm; and Jaeckh, Christof, 4,259,368, Cl. 427-130.000.

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Hoveler, Egon, 4,259,132, Cl. 156-215.000.

Jagst, Peter, to Trutzschler GmbH & Co. KG. Card frame. 4,258,453, Cl. 19-98.000.

Jakobs, Karlhans: *See—*
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Jakobsen, Jakob S.; and McCulloch, Robert M., to Danfoss A/S. Arrangement for guiding the rotary speed of one or more follower motors in response to the pulse frequency of a guide pulse frequency generator. 4,259,621, Cl. 318-85.000.

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DiPippo, Carmine A., 4,259,499, Cl. 548-211.000.

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Maruyama, Kunio, 4,259,307, Cl. 423-447.400.

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Szilagyi, Geza; Kasztreiner, Endre; Kosary, Judit; Matyus, Peter; Huszti, Zsuzsa; Cseh, Gyorgy; Kenessey, Agnes; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, 4,259,328, Cl. 424-248.530.

Jaunich, Helmut; Dunkelmann, Dieter; and Schiffarth, Josef. Coating carbon electrodes. 4,259,128, Cl. 156-94.000.

Jean-Claude Berney SA: *See—*
Berney, Jean-Claude, 4,259,736, Cl. 368-62.000.
Berney, Jean-Claude, 4,259,737, Cl. 368-66.000.

Jenaer Glaswerk Schott & Gen.: *See—*
Sack, Werner, 4,259,118, Cl. 106-54.000.

Jernigan, James L., to United States of America, Navy. Far field target designators. 4,259,009, Cl. 356-1.000.

Jeslis, Jerome: *See—*
Sessions, Robert W.; Jeslis, Jerome; and Rodzen, Richard A., 4,258,722, Cl. 128-753.000.

Jessop, Michael E., to General Motors Corporation. Shaft lock assembly for vehicle steering column. 4,258,560, Cl. 70-252.000.

Jet Spray Cooler, Inc.: *See—*
Manos, Thomas; and Self, Craig, 4,258,837, Cl. 194-1.00N.

Jezek, Bruce W.; and McClung, Glen L., to United States of America, Army. Method of assembling threaded base to a projectile. 4,258,462, Cl. 29-428.000.

Johannsmeier, Karl-Heinz; Stoft, Paul E.; and Larsen, Tor G., to Kasper Instruments, Inc. Apparatus for the automatic alignment of two superimposed objects, for example a semiconductor wafer and a transparent mask. 4,259,019, Cl. 356-400.000.

Johna, Nobuo: *See—*
Miyajima, Nobuyuki; Johna, Nobuo; Mizushima, Naoki; and Ohbu, Kazuo, 4,259,216, Cl. 252-545.000.

Johns-Manville Corporation: *See—*
Rodrigo, Peter; Whalen, Kemener J.; and French, David W., 4,258,935, Cl. 285-21.000.

Johnson, Allen S., Jr. Bag-type filter apparatus with combination bag support and air diffuser. 4,259,095, Cl. 55-302.000.

Johnson, Burnett H.; Chandler, John E.; and Lenz, Robert W., to Exxon Research & Engineering Co. Preparation of linear crystalline homopolybenzyl. 4,259,475, Cl. 528-397.000.

Johnson Controls, Inc.: *See—*
Gopal, Raj, 4,258,696, Cl. 126-400.000.
Trobaugh, Arnold G., 4,258,747, Cl. 137-488.000.

Johnson, Frederick O., to Westinghouse Electric Corp. Elevator system. 4,258,829, Cl. 187-29.00R.

Johnson, Ian M.: *See—*
Flesher, Peter; and Johnson, Ian M., 4,259,023, Cl. 366-220.000.

Johnson, James J., to General Motors Corporation. Rear view mirror assembly with support means connected to vehicle door and body. 4,258,983, Cl. 350-307.000.

Johnson & Johnson: *See—*
Hill, Roger C., 4,258,704, Cl. 128-1.00R.

Johnson & Johnson Baby Products Company: *See—*
Mesek, Frederick K., 4,259,387, Cl. 428-167.000.

Johnson, Ronald D. Dry bulk hopper having an improved slope sheet. 4,258,953, Cl. 298-27.000.

Johnson, Roy A., to Upjohn Company, The. 2-Decarboxy-2-aminomethyl-4-halo-5,9-epoxy-9-deoxy-PGF_1 compounds. 4,259,479, Cl. 542-426.000.

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Johnson, Wayne O., to Rohm and Haas Company. Preparation of trifluoromethylphenyl nitrophenylethers. 4,259,510, Cl. 560-21.000.

Joice, Richard L.; and Adamo, Joseph C. Polymer film slitter-sealer apparatus and method. 4,259,134, Cl. 156-251.000.

Joly, Robert, to United States of America, Navy. Diode array convolver. 4,259,726, Cl. 364-821.000.

Jones, Dennis G., deceased: *See—*
McCreery, James F.; and Jones, Dennis G., deceased, 4,259,033, Cl. 407-114.000.

Jones, Dolores H., executrix: *See—*
McCreery, James F.; and Jones, Dennis G., deceased, 4,259,033, Cl. 407-114.000.

Jones, William A.; and Kulak, John, to Deere & Company. Shielding structure for rotary mower. 4,258,535, Cl. 56-13.600.

Jones, William F.; and Breingan, Ian M., to Mangood Corporation. Apparatus and methods for weighing railroad cars coupled together and in motion. 4,258,809, Cl. 177-1.000.

Jones, William R. Vacuum furnace arrangement having an improved heating element mounting means. 4,259,538, Cl. 13-25.000.

Jorgensen, Iver; Veigert, Steen; and Andersen, Niels E., to Danfoss A/S. Method and regulator for controlling the delivery of a pump arrangement according to demand. 4,259,038, Cl. 417-53.000.

Jorgensen, Jorgen A.; and Nygren, Donald W., to Northland Aluminum Products, Inc. Portable turntable for use in microwave ovens. 4,258,630, Cl. 108-20.000.

Joy Manufacturing Company: *See—*
Mitchell, Ralph W., 4,258,957, Cl. 299-82.000.

Joyner, Frederick B.: *See—*
Trotter, Jimmy R.; McConnell, Richard L.; and Joyner, Frederick B., 4,259,470, Cl. 526-348.200.

Juergens, Dieter C., to Harnischfeger Corporation. Auxiliary counterweight arrangement for mobile crane. 4,258,852, Cl. 212-178.000.

Juergens, Tristan D.: *See—*
Uba, Toshio; and Juergens, Tristan D., 4,259,419, Cl. 429-174.000.

Juhala, Pentti J.: *See—*
Kaartinen, Niilo H.; and Juhala, Pentti J., 4,258,740, Cl. 137-74.000.

Juhlin, Lars-Erik: *See—*
Flisberg, Gunnar; and Juhlin, Lars-Erik, 4,259,713, Cl. 363-35.000.

Jung, Johann: *See—*
Platz, Rolf; Fuchs, Werner; Rieber, Norbert; Jung, Johann; and Wuerzer, Bruno, 4,259,235, Cl. 260-152.000.

Junod, Michael T.; and Bates, Albert M., to United States of America, Navy. Signal generator. 4,259,744, Cl. 455-103.000.

Juraschek, Richard, to Herbert Kannegiesser GmbH & Co. Method for rigidifying textile pieces by coating with plastic. 4,259,380, Cl. 427-428.000.

Jurgens, Arnold; Koopmann, Herbert; and Schwarz, Wilhelm, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Magazine with centering and coupling elements for measuring and sampling devices. 4,258,571, Cl. 73-425.40R.

Jyojiki, Masao: *See*—
Tokutomi, Seijiro; Ogawa, Ryota; Ohishi, Michiro; Nakamura, Kazuo; Jyojiki, Masao; and Tachihara, Satoru, 4,258,989, Cl. 354-25.000.

Kaartinen, Niilo H.; and Juhala, Pentti J., to Packard Instrument Company, Inc. Fluid flow control device. 4,258,740, Cl. 137-74.000.

Kabushiki Kaisha Sato Kenkyusho: *See*—
Sato, Yo, 4,259,138, Cl. 156-363.000.

Kabushiki Kaisha Suwa Seikosha: *See*—
Hanaoka, Seiji; Mori, Masahiko; and Kobayashi, Takao, 4,259,026, Cl. 400-124.000.
Mitsui, Yoshihiro, 4,258,624, Cl. 101-99.000.

Kabushiki Kaisha Yaskawa Denki Seisakusho: *See*—
Iwakane, Takanobu; Kai, Tohru; Hirose, Kenji; and Nakagawa, Koichiro, 4,259,628, Cl. 318-799.000.

K.K. Pollution Preventing Research Laboratory: *See*—
Ando, Wataru; and Nakaoka, Ichiro, 4,259,524, Cl. 562-526.000.

Kaczur, Jerry J.; and Mendiratta, Sudhir K., to Olin Corporation. Chromate removal from concentrated chlorate solution by chemical precipitation. 4,259,297, Cl. 423-55.000.

Kadau, Dennis K.; and Barkovich, Stephen J., to Poly Cast, Inc. Alloy for welding rods and the like. 4,259,111, Cl. 75-171.000.

Kadowaki, Kunio: *See*—
Arai, Hisaharu; Sato, Masami; and Kadowaki, Kunio, 4,258,685, Cl. 123-520.000.

Kaeriyama, Minoru: *See*—
Maeda, Kuniyasu; Kaeriyama, Minoru; Matsui, Nobuo; Ishikawa, Hisao; Yamada, Shozo; and Okunuki, Susumu, 4,259,105, Cl. 71-108.000.

Kahara, Toshiki: *See*—
Tamura, Kohki; Kahara, Toshiki; Horiba, Tatsuo; Ebato, Noboru; and Asai, Osamu, 4,259,415, Cl. 429-90.000.

Kai, Tohru: *See*—
Iwakane, Takanobu; Kai, Tohru; Hirose, Kenji; and Nakagawa, Koichiro, 4,259,628, Cl. 318-799.000.

Kajiura, Hirokazu; Murata, Kazuhiko; Oda, Hidekuni; and Yasutake, Tatsuo, to Mitsui Petrochemical Industries Ltd. Ethylene-α-olefin-polyene rubbery terpolymer and process for production thereof. 4,259,468, Cl. 526-283.000.

Kajiwara, Yuji: *See*—
Ohkubo, Toshio; Katoh, Hidehiko; and Kajiwara, Yuji, 4,259,564, Cl. 219-216.000.

Kakugo, Masahiro: *See*—
Shiga, Akinobu; Kakugo, Masahiro; Fukui, Yoshiharu; Yamada, Koji; Sadatoshi, Hajime; Wakamatsu, Kazuki; and Yoshioka, Hiroshi, 4,259,461, Cl. 525-247.000.

Kallenberger, Robert H.; and Anderson, John E., to Phillips Petroleum Company. Method for producing carbon black. 4,259,308, Cl. 423-449.000.

Kalman, Laszlo: *See*—
Csontos, Peter; Henter, Laszlo; Kalman, Laszlo; Kondor, Tibor; and Wein, Istvan, 4,259,581, Cl. 250-402.000.

Kalyan, Jagdish C.: *See*—
Hawley, Royal T.; Kalyan, Jagdish C.; Rogers, Alvin D.; and Sheppard, Monte G., 4,258,834, Cl. 191-12.20R.

Kaman, Charles H.; Sullivan, Daniel T.; O'Loughlin, James F.; and Mudge, Craig, to Digital Equipment Corporation. Processor for a data processing system. 4,259,718, Cl. 364-200.000.

Kamenicky, Jan; Michl, Jan; Sindelar, Zdenek; Ibl, Stanislav; and Salivar, Jaroslav, to CKD Praha, oborovy podnik. Circuit arrangement for driving and for independent recuperation braking of a vehicle. 4,259,622, Cl. 318-86.000.

Kamijo, Eiji: *See*—
Nakane, Ryohei; Isomura, Shohei; Okita, Koichi; Kamijo, Eiji; and Nishimoto, Tatsuya, 4,259,209, Cl. 252-430.000.

Kamogawa, Nin-ichi: *See*—
Ohmuro, Yuzo; Kamogawa, Nin-ichi; Uetake, Shigeru; and Yamazaki, Yoshio, 4,259,427, Cl. 430-107.000.

Kamyr Inc.: *See*—
Prough, James R., 4,259,150, Cl. 162-40.000.

Kamyr Valves, Inc.: *See*—
Kindersley, Peter G., 4,258,900, Cl. 251-172.000.

Kanchi, Masahiro: *See*—
Nakanishi, Kaoru; and Kanchi, Masahiro, 4,259,690, Cl. 358-183.000.

Kanegafuchi Chemical Industry Company, Limited: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Ishizuka, Masaaki; Watanabe, Kiyoshi; Yamashita, Toshiaki; Naoi, Noriyuki; and Hidaka, Takayoshi, 4,259,319, Cl. 424-117.000.

Kaneko, Katsumi: *See*—
Matsushima, Yoshihisa; Sakakibara, Tadamori; Kaneko, Katsumi; Wada, Shozo; Ishii, Yoshio; Nagashima, Yukio; and Okamoto, Nobukazu, 4,259,530, Cl. 568-454.000.

Kaneko, Yoichi; Sekine, Kenji; Hase, Eiichi; and Endo, Akira, to Hitachi, Ltd. Transmit/receive microwave circuit. 4,259,743, Cl. 455-81.000.

Kang, Jung W.: *See*—
Davis, James A.; and Kang, Jung W., 4,258,770, Cl. 152-330.00R.

Kang, Kenneth S., to Merck & Co., Inc. Process for making cellulase-free xanthan gum. 4,259,477, Cl. 536-114.000.

Kao Soap Co., Ltd.: *See*—
Homma, Itomi, 4,259,204, Cl. 252-174.160.
Murata, Moriyasu; and Suzuki, Akira, 4,259,215, Cl. 252-528.000.

Kao, Stephen S. T., to Modine Manufacturing Company. Heat exchanger having liquid turbulator. 4,258,782, Cl. 165-109.00T.

Kaplan, Leon H.; and Zimmerman, Steven M., to International Business Machines Corporation. Photoresist O-quinone diazide containing composition and resist mask formation process. 4,259,430, Cl. 430-191.000.

Karamanolis, Peter K.; and Tsaoussis, Peter W. Toothpaste dispenser. 4,258,864, Cl. 222-96.000.

Karhu-Titan Oy: *See*—
Tiitola, Antti-Jussi, 4,259,274, Cl. 264-46.500.

Karikawa, Tohru; and Satoh, Mituo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Mirror operating mechanism in cassette type SLR camera. 4,258,995, Cl. 354-153.000.

Karlen, Urs, to BBC Brown, Boveri & Company, Limited. End connection structure for a hollow conductor assembly. 4,258,939, Cl. 285-137.00R.

Karu, Tynu K.: *See*—
Lippmaa, Endel T.; Roose, Vambola I.; and Karu, Tynu K., 4,258,906, Cl. 266-250.000.

Karyshev, Vitaly D.: *See*—
Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladimir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K., 4,259,658, Cl. 340-26.000.

Kashihara, Shigeru: *See*—
Kato, Keizo; and Kashihara, Shigeru, 4,258,896, Cl. 248-573.000.

Kashihara, Toshitsugu; and Tanaka, Kazuo, to West Electric Company, Ltd. Photographic flash device. 4,259,615, Cl. 315-241.00P.

Kashiwagi, Kenzo: *See*—
Akao, Mutsuo; Kashiwagi, Kenzo; and Inoue, Koji, 4,258,848, Cl. 206-524.200.

Kasper Instruments, Inc.: *See*—
Johannsmeier, Karl-Heinz; Stoft, Paul E.; and Larsen, Tor G., 4,259,019, Cl. 356-400.000.

Kasuya, Michio: *See*—
Arai, Toshio; Inoue, Shunzo; Kuroda, Yasuo; Kasuya, Michio; Konishi, Motofumi; and Nakamura, Mitsuo, 4,259,007, Cl. 355-27.000.

Kasztreiner, Endre: *See*—
Szilagyi, Geza; Kasztreiner, Endre; Kosary, Judit; Matyus, Peter; Huszti, Zsuzsa; Cseh, Gyorgy; Kenessey, Agnes; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, 4,259,328, Cl. 424-248.530.

Katagiri, Ken: *See*—
Oikawa, Hiroshi; Katagiri, Ken; Kawaguchi, Harumoto; Kitabatake, Tetsuo; and Nakamoto, Koji, 4,259,321, Cl. 424-120.000.

Kataoka, Mitsuru: *See*—
Morisawa, Yasuhiro; Konishi, Kiyoshi; and Kataoka, Mitsuru, 4,259,350, Cl. 424-308.000.

Katayama, Yoshinori: *See*—
Itoh, Hiroshi; Tuchiya, Yoshimasa; and Katayama, Yoshinori, 4,258,950, Cl. 296-56.000.

Katinger, Hermann; and Scheirer, Winfried, to Chemap AG. Method of cultivating cells of animal and human tissues. 4,259,449, Cl. 435-241.000.

Kato, Hirohisa: *See*—
Tada, Tsukasa; Shimazaki, Yuzo; Kohda, Masanobu; Kato, Hirohisa; and Saeki, Hideo, 4,259,407, Cl. 428-421.000.

Kato, Keizo; and Kashihara, Shigeru, to Kubota, Ltd. Driver's seat mounting apparatus for a motor vehicle. 4,258,896, Cl. 248-573.000.

Kato, Kyosuke. Frying pan with mechanisms for preventing oil splashing and fire occurrence. 4,258,694, Cl. 126-299.00C.

Kato, Shigeo: *See*—
Hasegawa, Tetsuo; Kato, Shigeo; and Nishikawa, Yoshihiro, 4,259,426, Cl. 430-98.000.

Katoh, Hidehiko: *See*—
Ohkubo, Toshio; Katoh, Hidehiko; and Kajiwara, Yuji, 4,259,564, Cl. 219-216.000.

Katsura, Masaki: *See*—
Ichinose, Noboru; Okuma, Hideo; Yokomizo, Yuji; Takahashi, Takashi; Nishihara, Mieko; and Katsura, Masaki, 4,259,292, Cl. 422-98.000.

Katz, Murray; Gruver, Gary A.; and Kunz, H. Russell, to United Technologies Corporation. Regenerable ammonia scrubber. 4,259,302, Cl. 423-237.000.

Kaufman, Harold R.: *See*—
Harper, James M. E.; and Kaufman, Harold R., 4,259,145, Cl. 156-643.000.

Kaukanen, Esko: *See*—
Suovaniemi, Osmo A.; Ekholm, Pertti; and Kaukanen, Esko, 4,259,290, Cl. 422-65.000.

Kawaguchi, Harumoto: *See*—
Oikawa, Hiroshi; Katagiri, Ken; Kawaguchi, Harumoto; Kitabatake, Tetsuo; and Nakamoto, Koji, 4,259,321, Cl. 424-120.000.

Kawahara, Haruyuki: *See*—
Hirabayashi, Masaya; and Kawahara, Haruyuki, 4,259,072, Cl. 433-173.000.

Kawai, Makoto, to Nippon Telegraph and Telephone Public Corp. Satellite relay system. 4,259,741, Cl. 455-12.000.

Kawamura Institute of Chemical Research: *See*—
Okamoto, Tsuneo; and Wakao, Toshio, 4,259,634, Cl. 324-74.000.

Kawase, Tooru: *See—*
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Tooru; and Ueno, Yoshiki, 4,258,683, Cl. 123-416.000.
Kayabakogyokabushikikaisha: *See—*
Teruyama, Hideo, 4,259,045, Cl. 418-200.000.
Kazakov, Valery P.: *See—*
Nikitin, Jury E.; Murinov, Jury I.; Leplyanin, Gennady V.; Rafikov, Sagid R.; Bikchurina, Lilia K.; Tolstikov, Genrikh A.; Kazakov, Valery P.; Battalov, Edvard M.; Kolosnitsyn, Vladimir S.; Golodkova, Lyalya N.; Izmailov, Genrikh I.; and Markin, Gennady K., 4,259,229, Cl. 260-42.210.
Kazan, John; and Yu, Chen S., to American Cyanamid Company. Process for resolving DL-mandelic acid. 4,259,521, Cl. 562-401.000.
Keagbine, Francis R., to Allied Systems Company. Extensible spreader frame for cargo containers. 4,258,949, Cl. 294-81.0SF.
Keck, Dieter, to C. Keller G.m.b.H. u. Co. KG. Method and apparatus for transporting cut brick elements to a transfer station. 4,258,599, Cl. 183-112.000.
Kelemen, Andras: *See—*
Gonczi, Csaba; Korbonits, Dezso; Kiss, Pal; Palosi, Endre; Heja, Gergely; Szvoboda nee Kanzel, Ida; Cser nee Kun, Judit; Szomor nee Wundele, Maria; Kormoczi, Gyorgy; and Kelemen, Andras, 4,259,344, Cl. 424-273.00B.
Keller, Robert N., to National Steel Corporation. Expanded reinforcing sheet material, its method of manufacture, and sheet material reinforced therewith. 4,259,385, Cl. 428-135.000.
Keller, Teddy M.; and Griffith, James R., to United States of America, Navy. Polyphenylether-bridged polyphthalocyanine. 4,259,471, Cl. 528-9.000.
Kelly, James B.; and Wilson, David S., to Carrier Corporation. Vapor compression refrigeration system and a method of operation therefor. 4,258,553, Cl. 62-117.000.
Kemmerling, Karl-Heinz, to Mannesmann Aktiengesellschaft. Jacketing steel pipes by means of wrapping a ribbon helically around the pipes. 4,259,137, Cl. 156-350.000.
Kemper, Yves J.; and Pouliot, Harvey N., to Vadetec Corporation. Counterbalancing system for nutational traction drive transmissions. 4,258,581, Cl. 74-192.000.
Kende, Andrew S.; and Newman, Howard. Novel heterocyclic anthracycline compounds. 4,259,476, Cl. 536-17.00A.
Kenessey, Agnes: *See—*
Szilagyi, Geza; Kasztreiner, Endre; Kosary, Judit; Matyus, Peter; Huszti, Zsuzsa; Cseh, Gyorgy; Kenessey, Agnes; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, 4,259,328, Cl. 424-248.530.
Kennametal Inc.: *See—*
McCreery, James F.; and Jones, Dennis G., deceased, 4,259,033, Cl. 407-114.000.
Kennel, John M., to United States of America, Air Force. Floated, internally gimballed platform assembly. 4,258,578, Cl. 74-5.340.
Keogh, Philip L.; Kunzler, Jay F.; and Niu, Gregory C. C., to Bausch & Lomb Incorporated. Hydrophilic contact lens made from polysiloxanes containing hydrophilic sidechains. 4,259,467, Cl. 526-279.000.
Kern & Co. AG: *See—*
Hauri, Bernhard, 4,259,010, Cl. 356-2.000.
Kerr-McGee Chemical Corporation: *See—*
Clapper, Thomas W., 4,259,310, Cl. 423-561.00R.
Kersting, Hans-Joachim: *See—*
Weber, Heinrich; Lorenz, Kurt; Dungs, Horst; Kurtz, Roman; and Kersting, Hans-Joachim, 4,259,158, Cl. 202-121.000.
Ketchum, John L. Soccer training apparatus. 4,258,924, Cl. 273-411.000.
Kettlestrings, John S.; and Bailey, Cecil J., to Cling Cal Corporation. Advertising display means and method. 4,258,493, Cl. 40-600.000.
Keweza, Joseph T. Wireless logic trainer. 4,259,077, Cl. 434-118.000.
Khan, Abdul Q., to Huyck Corporation. Papermaking fabrics with enhanced dimensional stability. 4,259,394, Cl. 428-229.000.
Kidd, Earl H.; Martin, Herman H., Jr.; and Reid, Raymond R., to Outboard Marine Corporation. Power rotary cutting blade with retractable cutting knives. 4,258,536, Cl. 56-17.500.
Kiejzik, Paul A. Process and device for viewing adjacent microfilm frames in series. 4,258,531, Cl. 53-520.000.
Kiessling, Hans-Joachim: *See—*
Dalibor, Horst; Kiessling, Hans-Joachim; and Quednau, Peter, 4,259,224, Cl. 260-31.2XA.
Kii, Masami, to Mitsubishi Denki Kabushiki Kaisha. Self-extinguishing gas circuit interrupter. 4,259,555, Cl. 200-148.00R.
Kii, Masami, to Mitsubishi Denki Kabushiki Kaisha. Gas puffer-type circuit interrupter. 4,259,556, Cl. 200-148.00R.
Kiknadze, Gennady I.: *See—*
Ambardanishvili, Tristan S.; Dundua, Vakhtang J.; Kiknadze, Gennady I.; Kolomiitsev, Mikhail A.; Tsetskhladze, Teya V.; Gromov, Vladimir A.; and Bagdavadze, Nanuli V., 4,259,280, Cl. 264-101.000.
Kikuchi, Kazuo: *See—*
Miura, Tatsuhiko; Toyoshima, Takefumi; Kikuchi, Kazuo; and Masaki, Akio, 4,258,820, Cl. 180-295.000.
Kilbourn, Edward E.: *See—*
Aller, Harold E.; Kilbourn, Edward E.; Weiler, Ernest D.; and Weir, William D., 4,259,330, Cl. 424-200.000.
Killian, Jimmie W., to United States of America, Navy. AC Motor controller. 4,259,630, Cl. 318-807.000.
Kiltz, Richard C.: *See—*
Brown, Bruce M., 4,258,501, Cl. 47-16.000.
Kimberly-Clark Corporation: *See—*
Werner, Edward E., 4,258,455, Cl. 19-303.000.
Kindersley, Peter G., to Kamyr Valves, Inc. Structure maintaining seats against ball valves. 4,258,900, Cl. 251-172.000.
King, John M.; and deVries, Louis, to Chevron Research Company. Reaction product of acidic molybdenum compound with basic nitrogen compound and lubricants containing same. 4,259,195, Cl. 252-49.700.
King, John M.: *See—*
deVries, Louis; and King, John M., 4,259,194, Cl. 252-46.400.
Kinoshita, Ryoichi: *See—*
Orihara, Shobu; Iwasa, Seiichi; and Kinoshita, Ryoichi, 4,259,727, Cl. 365-16.000.
Kirchner, Leatha. Garment for dressing out and skinning animals. 4,258,438, Cl. 2-46.000.
Kishi, Ikuji: *See—*
Nakano, Tatsuo; Hori, Shozo; and Kishi, Ikuji, 4,259,462, Cl. 525-263.000.
Kiss, Pal: *See—*
Gonczi, Csaba; Korbonits, Dezso; Kiss, Pal; Palosi, Endre; Heja, Gergely; Szvoboda nee Kanzel, Ida; Cser nee Kun, Judit; Szomor nee Wundele, Maria; Kormoczi, Gyorgy; and Kelemen, Andras, 4,259,344, Cl. 424-273.00B.
Kiss, Steven R.: *See—*
Fegley, Richard F.; and Kiss, Steven R., 4,258,613, Cl. 493-22.000.
Kitabatake, Tetsuo: *See—*
Oikawa, Hiroshi; Katagiri, Ken; Kawaguchi, Harumoto; Kitabatake, Tetsuo; and Nakamoto, Koji, 4,259,321, Cl. 424-120.000.
Kitai, Kiyoshi; Nakagawa, Tadashi; and Ishida, Hiroaki, to Seiko Koki Kabushiki Kaisha. Focusing device for automatic focusing camera. 4,258,988, Cl. 354-25.000.
Kiwala, Jacob: *See—*
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,258,727, Cl. 131-9.000.
Klaissle, Siegfried: *See—*
Peetz, Wolfgang; and Klaissle, Siegfried, 4,258,808, Cl. 175-394.000.
Klawitter, Helmut: *See—*
Dittmann, Walter; Frese, Albert; Hahmann, Otto; Plenikowski, Johannes; and Klawitter, Helmut, 4,259,410, Cl. 428-461.000.
Kleber, Rolf; and Muller, Heinz, to Hoechst Aktiengesellschaft. Heatstable quaternary ammonium compounds for fiber lubricating. 4,259,078, Cl. 8-115.600.
Kleinberger, Gunter, to Leopold & Co., Chem. Pharm. Fabrik Gesellschaft m. b. H. Infusion solutions for the treatment of hepatic encephalopathy and method of using them. 4,259,353, Cl. 424-319.000.
Klimmer, Josef W.: *See—*
Glaser, Fritz; Gortz, Christoph; Buhler, Kurt K.; Klimmer, Josef W.; Laberheim, Rene; Pauli, Klaus H.; and Velten, Werner, 4,258,726, Cl. 130-27.00L.
Klink, Erich: *See—*
Heuber, Klaus; Klink, Erich; Rudolph, Volker; and Wiedmann, Siegfried K., 4,259,730, Cl. 365-156.000.
Klink, Rainer, to Daimler-Benz Aktiengesellschaft. Installation for the accommodation of an interchangeable energy-storage device in a motor vehicle. 4,258,816, Cl. 180-68.500.
Klockner-Humboldt-Deutz AG: *See—*
Ramesohl, Hubert; Herchenbach, Horst; and Schroder, Karlheinz, 4,259,062, Cl. 432-78.000.
Kloczewski, Harold A.; and Schaeffer, Cheryl N., to W. R. Grace & Co. Pressurized wire enamel applicator cell. 4,258,646, Cl. 118-50.100.
Klose, Odo, to Bremshey AG. Multi-purpose piece of furniture for use as chair and step-ladder. 4,258,827, Cl. 182-33.300.
Kneib, Rudi: *See—*
Scharm, Dieter; Emmer, Ludwig; Reinhard, Theodor; and Kneib, Rudi, 4,258,555, Cl. 62-244.000.
Knepper, J. Irvine: *See—*
Naiman, Michael I.; Knepper, J. Irvine; and Thompson, Neil E. S., 4,259,087, Cl. 44-62.000.
Knibb, Terence F.; and O'Rourke, Richard G., to Plessey Handel und Investments A.G. Display devices. 4,259,679, Cl. 357-17.000.
Knight, David J.; and Lippiatt, Sidney A., to Bendix Westinghouse Limited. Fluid pressure operable tractor and trailer vehicle braking systems. 4,258,959, Cl. 303-7.000.
Knoedler, Helmut: *See—*
Haegele, Gerhard; and Knoedler, Helmut, 4,258,584, Cl. 74-424.80R.
Knofel, Hartmut: *See—*
Dunlap, Kenneth L.; and Knofel, Hartmut, 4,259,526, Cl. 564-331.000.
Knoke, Jurgen: *See—*
Fahrbach, Erich; Graber, Adolf; Knoke, Jurgen; Schweizer, Helmer; and Tecl, Bohuslav, 4,259,390, Cl. 428-195.000.
Knudtson, Brice N.; Knudtson, Stanley B.; and Knudtson, Byron L. Apparatus for applying sealant to the irregular side edges of a panel. 4,258,651, Cl. 118-114.000.
Knudtson, Byron L.: *See—*
Knudtson, Brice N.; Knudtson, Stanley B.; and Knudtson, Byron L., 4,258,651, Cl. 118-114.000.
Knudtson, Stanley B.: *See—*
Knudtson, Brice N.; Knudtson, Stanley B.; and Knudtson, Byron L., 4,258,651, Cl. 118-114.000.
Kobashi, Mamoru: *See—*
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Tooru; and Ueno, Yoshiki, 4,258,683, Cl. 123-416.000.

Kobayashi, Hajime: *See*—
Endo, Ichiro; Kobayashi, Hajime; Komatsu, Toshiyuki; and Ohno, Shigeru, 4,259,424, Cl. 430-48.000.
Kobayashi, Takao: *See*—
Hanaoka, Seiji; Mori, Masahiko; and Kobayashi, Takao, 4,259,026, Cl. 400-124.000.
Kobayashi, Takehiro, to Sharp Kabushiki Kaisha. Hair waving appliance having plural independently temperature controllable electric heaters. 4,259,566, Cl. 219-222.000.
Kobayashi, Takehiro: *See*—
Tsujimoto, Susumu; Yamazaki, Hayao; Ozaki, Masayoshi; Kobayashi, Takehiro; Fujino, Toru; Yasuda, Mitsuo; Minami, Katsuji; and Itogawa, Zirou, 4,258,731, Cl. 132-9.000.
Kobayashi, Takeshi: *See*—
Matsuno, Takeshi; and Kobayashi, Takeshi, 4,259,627, Cl. 318-600.000.
Kobe, Inc.: *See*—
Brown, F. Barton, 4,259,041, Cl. 417-559.000.
Kobinger, Walter: *See*—
Benedikter, Lothar; Kobinger, Walter; Pichler, Ludwig; Ihrig, Hanns; and Griss, Gerhart, 4,259,342, Cl. 424-270.000.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; Pichler, Ludwig; Hoefke, Wolfgang; and Gaida, Wolfram, 4,259,346, Cl. 424-273.00R.
Koch, Peter H.; and Friebe, Bernhard H., to VDO Adolf Schindling AG. Method and apparatus for recording the compression pressure of internal combustion engines. 4,259,677, Cl. 346-124.000.
Koehl, Jean-Marie. Articulated panel structure for lining excavation trenches. 4,259,029, Cl. 405-282.000.
Koehler, Fulton: *See*—
Taner, M. Turhan; Sheriff, Robert E.; and Koehler, Fulton, 4,259,733, Cl. 367-61.000.
Koenigs, Hans B.: *See*—
Lorenz, Kurt; Dungs, Horst; Koenigs, Hans B.; and Kurtz, Roman, 4,259,157, Cl. 201-39.000.
Kohda, Masanobu: *See*—
Tada, Tsukasa; Shimazaki, Yuzo; Kohda, Masanobu; Kato, Hirohisa; and Saeki, Hideo, 4,259,407, Cl. 428-421.000.
Kohler, Thomas P. Electronic ballast-inverter for multiple fluorescent lamps. 4,259,614, Cl. 315-219.000.
Kohyama, Fumio: *See*—
Noguchi, Kazuo; Wakasugi, Makoto; and Kohyama, Fumio, 4,259,607, Cl. 310-364.000.
Kojima, Yasuhumi: *See*—
Iwata, Yasuhiro; Usami, Kiyoshu; Naganoma, Masanori; Nabeta, Teiichi; and Kojima, Yasuhumi, 4,259,722, Cl. 364-424.000.
Koller, Stefan; Zink, Rudolf; and Schwander, Hansrudolf, to Ciba-Geigy Corporation. Azo compounds, containing a 1,2,4-thiadiazole moiety. 4,259,236, Cl. 260-156.000.
Kollmorgen Technologies Corporation: *See*—
Nuzzi, Francis J.; Leech, Edward J.; Charm, Richard W.; and Polichette, Joseph, 4,259,113, Cl. 106-1.110.
Kolomiitsev, Mikhail A.: *See*—
Ambardanishvili, Tristan S.; Dundua, Vakhtang J.; Kiknadze, Gennady I.; Kolomiitsev, Mikhail A.; Tsetskhladze, Teya V.; Gromov, Vladimir A.; and Bagdavadze, Nanuli V., 4,259,280, Cl. 264-101.000.
Kolosnitsyn, Vladimir S.: *See*—
Nikitin, Jury E.; Murinov, Jury I.; Leplyanin, Gennady V.; Rafikov, Sagid R.; Bikchurina, Lilia K.; Tolstikov, Genrikh A.; Kazakov, Valery P.; Battalov, Edvard M.; Kolosnitsyn, Vladimir S.; Golodkova, Lyalya N.; Izmailov, Genrikh I.; and Markin, Gennady K., 4,259,229, Cl. 260-42.210.
Komatsu, Toshiyuki: *See*—
Endo, Ichiro; Kobayashi, Hajime; Komatsu, Toshiyuki; and Ohno, Shigeru, 4,259,424, Cl. 430-48.000.
Kommandiittiyhtio Finnpipette Osmo A. Suovaniemi: *See*—
Suovaniemi, Osmo A.; Ekholm, Pertti; and Kaukanen, Esko, 4,259,290, Cl. 422-65.000.
Kondo, Shiro; and Kumagai, Masao, to Alps Electric Co., Ltd. Illuminated push-button electrical switch assembly. 4,259,559, Cl. 200-311.000.
Kondoh, Syunichi; Matsufuji, Akihiro; Ohara, Yuji; and Umehara, Akira, to Fuji Photo Film Co., Ltd. Photopolymerizable compositions having combined photoinitiators. 4,259,432, Cl. 430-281.000.
Kondor, Tibor: *See*—
Csontos, Peter; Henter, Laszlo; Kalman, Laszlo; Kondor, Tibor; and Wein, Istvan, 4,259,581, Cl. 250-402.000.
Konishi, Kiyoshi: *See*—
Morisawa, Yasuhiro; Konishi, Kiyoshi; and Kataoka, Mitsuru, 4,259,350, Cl. 424-308.000.
Konishi, Motofumi: *See*—
Arai, Toshio; Inoue, Shunzo; Kuroda, Yasuo; Kasuya, Michio; Konishi, Motofumi; and Nakamura, Mitsuo, 4,259,007, Cl. 355-27.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Ohmuro, Yuzo; Kamogawa, Nin-ichi; Uetake, Shigeru; and Yamazaki, Yoshio, 4,259,427, Cl. 430-107.000.
Koopmann, Herbert: *See*—
Jurgens, Arnold; Koopmann, Herbert; and Schwarz, Wilhelm, 4,258,571, Cl. 73-425.40R.
Koor Metals Ltd.: *See*—
Masel, Ruben; and Valdshtein, George, 4,258,699, Cl. 126-432.000.
Koppe, Herbert: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; Pichler, Ludwig; Hoefke, Wolfgang; and Gaida, Wolfram, 4,259,346, Cl. 424-273.00R.
Korbonits, Dezso: *See*—
Gonczi, Csaba; Korbonits, Dezso; Kiss, Pal; Palosi, Endre; Heja, Gergely; Szvoboda nee Kanzel, Ida; Cser nee Kun, Judit; Szomor nee Wundele, Maria; Kormoczi, Gyorgy; and Kelemen, Andras, 4,259,344, Cl. 424-273.00B.
Korf-Stahl AG: *See*—
Elsner, Emil A.; Ameling, Dieter C.; Assenmacher, Rolf; and Fuchs, Gerhard, 4,259,539, Cl. 13-32.000.
Korkosz, Gregory J., to Summa Corporation. Trimmable feel system for aircraft control. 4,258,890, Cl. 244-223.000.
Kormoczi, Gyorgy: *See*—
Gonczi, Csaba; Korbonits, Dezso; Kiss, Pal; Palosi, Endre; Heja, Gergely; Szvoboda nee Kanzel, Ida; Cser nee Kun, Judit; Szomor nee Wundele, Maria; Kormoczi, Gyorgy; and Kelemen, Andras, 4,259,344, Cl. 424-273.00B.
Kornev, Oleg J.: *See*—
Vagin, Alexei A.; Kornev, Oleg J.; and Bednyakov, Alexandr I., 4,259,046, Cl. 425-8.000.
Kortbeek, Andras G. T. G.; and Van Der Nat, Adrianus A., to Shell Oil Company. Preparation of an active $ticl_3$ catalyst. 4,259,466, Cl. 526-142.000.
Kortepeter, Dale T. Machine for applying roofing material. 4,259,142, Cl. 156-497.000.
Korzeb, Frank; and Bayly, William I., to AGF Inc. Discharge end structure for rotary retorts. 4,259,060, Cl. 432-3.000.
Kosa, Edit: *See*—
Szilagyi, Geza; Kasztreiner, Endre; Kosary, Judit; Matyus, Peter; Huszti, Zsuzsa; Cseh, Gyorgy; Kenessey, Agnes; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, 4,259,328, Cl. 424-248.530.
Kosary, Judit: *See*—
Szilagyi, Geza; Kasztreiner, Endre; Kosary, Judit; Matyus, Peter; Huszti, Zsuzsa; Cseh, Gyorgy; Kenessey, Agnes; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, 4,259,328, Cl. 424-248.530.
Kosswig, Kurt: *See*—
Coenen, Alfred; Kosswig, Kurt; and von Praun, Ferdinand, 4,259,309, Cl. 423-481.000.
Kotah, Mitsumi: *See*—
Niimi, Koji; and Kotah, Mitsumi, 4,258,602, Cl. 84-1.010.
Kotick, Michael P.; and Polazzi, Joseph O., to Miles Laboratories, Inc. 17-Cyclobutylmethyl-3-hydroxy-β-methyl-6-methylene morphinane, and methods of treating pain with them. 4,259,329, Cl. 424-260.000.
Koyama, Mitsuo: *See*—
Watanabe, Masanori; Nakagawa, Tadashi; Nemoto, Ichiro; Onda, Eiichi; and Koyama, Mitsuo, 4,259,001, Cl. 354-266.000.
Koyama, Shigeo: *See*—
Yamagata, Ryutaro; Matsuo, Sohei; Koyama, Shigeo; Kozuka, Nobuhiko; Tohi, Yasusuke; and Aizawa, Tatsuo, 4,259,008, Cl. 355-29.000.
Kozuka, Nobuhiko: *See*—
Yamagata, Ryutaro; Matsuo, Sohei; Koyama, Shigeo; Kozuka, Nobuhiko; Tohi, Yasusuke; and Aizawa, Tatsuo, 4,259,008, Cl. 355-29.000.
Krabetz, Richard; Herrmann, Walter; Scholz, Norbert; Engelbach, Heinz; Engert, Gerd-Juergen; Willersinn, Carl-Heinz; Duembgen, Gerd; and Thiessen, Fritz, to BASF Aktiengesellschaft. Catalyst for the oxidation of acrolein and methacrolein to acrylic acid and methacrylic acid, respectively. 4,259,211, Cl. 252-443.000.
Kraftwerk Union Aktiengesellschaft: *See*—
Fricker, Peter; Leyendecker, Kuno; Scharl, Jurgen; Wagner, Helmut; Wunsch, Horst; and Scholz, Manfred, 4,258,521, Cl. 52-406.000.
Neuenfeldt, Walter; Sulic, Milan; and Pollak, Gerd, 4,259,156, Cl. 176-87.000.
Peehs, Martin; and Hunner, Manfred, 4,259,155, Cl. 176-78.000.
Kreibich, Ursula; and Schmid, Rolf, to Ciba-Geigy Corporation. Use of crystalline, crosslinked synthetic resins as a storage material in latent heat stores. 4,259,198, Cl. 252-70.000.
Krieger, Manfred: *See*—
Bollingen, Pietro; and Krieger, Manfred, 4,259,523, Cl. 562-500.000.
Kroenke, William J., to B. F. Goodrich Company, The. Smoke retardant vinyl chloride and vinylidene chloride polymer compositions with amine molybdates. 4,259,491, Cl. 546-8.000.
Krueger, Gottfried J., to European Atomic Energy Community (EURATOM). Apparatus for inducing nuclear magnetic resonance within flowing mediums including superconducting coils. 4,259,638, Cl. 324-306.000.
Kruger, Hans-Rudolf, to Schering Aktiengesellschaft. Process for the preparation of 5-mercapto-1,2,3-triazoles. 4,259,502, Cl. 548-255.000.
Krumme, Hans J., to Siemens Aktiengesellschaft. Apparatus for transmitting signals. 4,259,584, Cl. 250-445.00T.
Krylov, Robert M.: *See*—
Pryamilov, Jury S.; Nikolaichev, Nikolai A.; Negin, Gennady V.; Duntsev, Vsevolod Y.; Krylov, Robert M.; and Shiryaev, Vladimir I., 4,259,153, Cl. 176-30.000.
Kubo, Akira: *See*—
Suzuki, Tameyuki; Shirakashi, Yoshio; Tsutsui, Nobukazu; Yamamoto, Sadao; Kubo, Akira; Teshima, Yasuhiko; and Kuranami, Nobuo, 4,259,163, Cl. 204-181.00T.

Kubo, Seitoku: *See*—
Numazawa, Akio; Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,258,586, Cl. 74-695.000.

Kubota, Ltd.: *See*—
Kato, Keizo; and Kashihara, Shigeru, 4,258,896, Cl. 248-573.000.

Kuehnle, Manfred R., to Coulter Systems Corporation. Device and method for developing latent electrostatic images. 4,259,005, Cl. 355-10.000.

Kueny, Michel: *See*—
Le Chatelier, Jacques; and Kueny, Michel, 4,258,541, Cl. 57-58.890.

Kuhfuss, Herbert F.: *See*—
Jackson, Winston J., Jr.; and Kuhfuss, Herbert F., 4,259,478, Cl. 528-307.000.

Kuhlmann, Herbert, to Wibau. Piston pump for conveying concrete mixes. 4,258,612, Cl. 92-128.000.

Kuhner, Albert, to Rothmans of Pall Mall Canada Limited. Air lock. 4,259,032, Cl. 406-62.000.

Kulak, John: *See*—
Jones, William A.; and Kulak, John, 4,258,535, Cl. 56-13.600.

Kulla, Josef, to BFG Glassgroup. Glazing technique. 4,259,135, Cl. 156-293.000.

Kumagai, Masao: *See*—
Kondo, Shiro; and Kumagai, Masao, 4,259,559, Cl. 200-311.000.

Kumita, Izumi: *See*—
Nakamura, Hiroaki; Kumita, Izumi; Sugita, Yoshiji; and Takagi, Hiedo, 4,259,448, Cl. 435-215.000.

Kummer, Rudolf; Schneider, Heinz-Walter; and Weiss, Franz-Josef, to BASF Aktiengesellschaft. Preparation of butanedicarboxylic acid esters. 4,259,520, Cl. 560-204.000.

Kummer, Werner: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; Pichler, Ludwig; Hoefke, Wolfgang; and Gaida, Wolfram, 4,259,346, Cl. 424-273.00R.

Kumok, Simona T.: *See*—
Gurvich, Yakov A.; Kumok, Simona T.; Latysheva, Galina G.; Rybak, Anna I.; Styskin, Evgeny L.; Liakumovich, Alexandr G.; Michurov, Jury I.; Filipova, Rufina A.; Yanshevsky, Vladimir A.; Rutman, Grigory I.; and Logutov, Igor J., 4,259,534, Cl. 568-720.000.

Kunde, Klaus; and Schoffski, Klaus, to Sulzer Morate GmbH. Knitting machine for producing knitted goods with combed-in fibres. 4,258,557, Cl. 66-9.00B.

Kunkel, Heinrich; Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Ernst, Horst M., to Sandvik AB; and Aktiebolaget SKF. Rotary drill bit with rotary cutters. 4,258,806, Cl. 175-370.000.

Kuntze, Richard A.: *See*—
Glass, Roger W.; and Kuntze, Richard A., 4,259,146, Cl. 162-3.000.

Kunz, H. Russell: *See*—
Katz, Murray; Gruver, Gary A.; and Kunz, H. Russell, 4,259,302, Cl. 423-237.000.

Kunzler, Jay F.: *See*—
Keogh, Philip L.; Kunzler, Jay F.; and Niu, Gregory C. C., 4,259,467, Cl. 526-279.000.

Kuo, Chang-Kiang; and Tsaur, Shyh-Chang, to Texas Instruments Incorporated. High density electrically programmable ROM. 4,258,466, Cl. 29-571.000.

Kuo, Ted L. C.; Piasecki, Raymond F.; and Grundfest, Michael A., to Thomas & Betts Corporation. Installation kit for undercarpet wiring system. 4,258,974, Cl. 339-97.00R.

Kuraishi, Kaoru, to Toshiba Photo Products Co., Ltd. Electronic flash apparatus for a camera. 4,258,991, Cl. 354-32.000.

Kuramochi, Koujiro: *See*—
Numazawa, Akio; Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,258,586, Cl. 74-695.000.

Kuranami, Nobuo: *See*—
Suzuki, Tameyuki; Shirakashi, Yoshio; Tsutsui, Nobukazu; Yamamoto, Sadao; Kubo, Akira; Teshima, Yasuhiko; and Kuranami, Nobuo, 4,259,163, Cl. 204-181.00T.

Kuraray Co., Ltd.: *See*—
Nakaji, Osamu; Takashima, Seisuke; and Nakamura, Seishiro, 4,259,303, Cl. 423-239.000.
Yamauchi, Junichi; Masuhara, Eiichi; Nakabayashi, Nobuo; Shibatani, Kyoichiro; and Wada, Tooru, 4,259,075, Cl. 433-217.000.
Yamauchi, Junichi; Masuhara, Eiichi; Nakabayashi, Nobuo; Shibatani, Kyoichiro; and Wada, Tooru, 4,259,117, Cl. 106-35.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Nagai, Hiroshi; and Okamoto, Tsuneo, 4,259,094, Cl. 55-181.000.

Kuribayashi, Hiroshi; and Ikeda, Atsuo, to Pioneer Electronic Corporation. Electromagnetic linear-motion device. 4,259,602, Cl. 310-12.000.

Kuroda, Yasuo: *See*—
Arai, Toshio; Inoue, Shunzo; Kuroda, Yasuo; Kasuya, Michio; Konishi, Motofumi; and Nakamura, Mitsuo, 4,259,007, Cl. 355-27.000.

Kurosawa, Ryoichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Control devices of induction motors. 4,259,629, Cl. 318-807.000.

Kurtz, Leonard D.; and Bidwell, Robert E., to BioResearch Inc. Sound muffling baffle for drainage device. 4,258,824, Cl. 181-233.000.

Kurtz, Roman: *See*—
Lorenz, Kurt; Dungs, Horst; Koenigs, Hans B.; and Kurtz, Roman, 4,259,157, Cl. 201-39.000.
Weber, Heinrich; Lorenz, Kurt; Dungs, Horst; Kurtz, Roman; and Kersting, Hans-Joachim, 4,259,158, Cl. 202-121.000.

Kuwakado, Satosi: *See*—
Tsuge, Noboru; Kuwakado, Satosi; Takei, Toshihiro; and Shimokawa, Toshiaki, 4,258,934, Cl. 280-806.000.

Kuznia, Christian, to Siemens Aktiengesellschaft. Computer system for the image synthesis of a transverse body section and method for the operation of the computer system. 4,259,721, Cl. 364-414.000.

Kyoto Ceramic Co., Ltd.: *See*—
Hirabayashi, Masaya; and Kawahara, Haruyuki, 4,259,072, Cl. 433-173.000.

Kyowa Gas Chemical Industry Co. Ltd.: *See*—
Takematsu, Tetsuo; Segawa, Hirozo; Miura, Takamaro; Ataka, Toshiei; Chatani, Michio; and Nakamura, Akira, 4,259,489, Cl. 544-336.000.

Kyushima, Tatsuo: *See*—
Numazawa, Akio; Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,258,586, Cl. 74-695.000.

L. & C. Steinmuller GmbH: *See*—
Dorling, Rolf; and Hemschemeier, Hans, 4,258,781, Cl. 165-67.000.

L. R. Nelson Corporation: *See*—
Hayes, Jerry R., 4,258,882, Cl. 2ₒ9-73.000.

Labarre, Ernest D.: *See*—
Wallace, Edward M.; Gosselin, Robert G.; and Labarre, Ernest D., 4,258,472, Cl. 30-262.000.

Laberheim, Rene: *See*—
Glaser, Fritz; Gortz, Christoph; Buhler, Kurt K.; Klimmer, Josef W.; Laberheim, Rene; Pauli, Klaus H.; and Velten, Werner, 4,258,726, Cl. 130-27.00L.

Labofina S.A.: *See*—
Hanotier, Jacques D. V., 4,259,522, Cl. 562-412.000.

Laboratoire de Recherche Api S.A.R.L.: *See*—
Gayral, Jean-Pierre, 4,259,442, Cl. 435-36.000.

Laboratorio Chimico Farmaceutico CAUSYTH S.p.A.: *See*—
Passoni, Raffaele; and Camboni, Vittorio, 4,259,332, Cl. 424-230.000.

Lafarge Fondu International: *See*—
Mathieu, Alain, 4,259,121, Cl. 106-104.000.

Laforest, Jacqueline; Bonnet, Jacqueline; and Bessin, Pierre, to Albert Rolland S.A. 2-Methyl-2-phenoxy-propionic acid derivatives, process for their preparation and therapeutical applications thereof. 4,259,509, Cl. 549-77.000.

Lahav, Meir: *See*—
Sifniades, Stylianos; Lahav, Meir; and Boyle, William J., Jr., 4,259,239, Cl. 260-239.30R.

Lalli, Ronald P. Isokinesthetic device. 4,258,914, Cl. 272-71.000.

Lamb, Charles C. T. Boot. 4,258,481, Cl. 36-120.000.

Lambert, Thomas W.: *See*—
Andrews, Edward W.; Blake, James E.; and Lambert, Thomas W., 4,259,725, Cl. 364-521.000.

Lamm, Heinz, to Daimler-Benz Aktiengesellschaft. Heating system producing warm air for motor vehicles driven by an internal combustion engine. 4,258,676, Cl. 123-142.50R.

Lamson & Sessions Co., The: *See*—
Pamer, Walter R.; and Capuano, Terry D., 4,258,768, Cl. 152-176.000.

Landis, Bruce J.: *See*—
Goudy, Paul R., Jr., 4,259,021, Cl. 366-118.000.

Landis, Kenneth J.: *See*—
Goudy, Paul R., Jr., 4,259,021, Cl. 366-118.000.

Landry, Alfred E. Computer math game. 4,258,922, Cl. 273-302.000.

Lanfranconi, Gianmario; and Vecellio, Bernardino, to Industrie Pirelli S.p.A. Process for reducing micro-voids in the extruded insulation of electric cables. 4,259,281, Cl. 264-102.000.

Lang, Stanley A., Jr.; Lin, Yang-I; and Ridge, David N., to American Cyanamid Company. Substituted 1H-1,2,4-triazoles. 4,259,504, Cl. 548-262.000.

Lankinen, Matti: *See*—
Surakka, Jorma; and Lankinen, Matti, 4,259,180, Cl. 209-211.000.

Lansard, Andre L. Implement position indicator. 4,258,484, Cl. 37-41.000.

LaPointe, to Miville, Rolland. Individual safe keeping box. 4,258,632, Cl. 109-59.00R.

Laroche Navarron S.A.: *See*—
Pascal, Jean C.; and Pinhas, Henri, 4,259,334, Cl. 424-250.000.

Larsen, Hans-Ole: *See*—
Sorensen, Erik L.; Wolff, Per; and Larsen, Hans-Ole, 4,258,705, Cl. 128-1.00R.

Larsen, Tor G.: *See*—
Johannsmeier, Karl-Heinz; Stoft, Paul E.; and Larsen, Tor G., 4,259,019, Cl. 356-400.000.

Latysheva, Galina G.: *See*—
Gurvich, Yakov A.; Kumok, Simona T.; Latysheva, Galina G.; Rybak, Anna I.; Styskin, Evgeny L.; Liakumovich, Alexandr G.; Michurov, Jury I.; Filipova, Rufina A.; Yanshevsky, Vladimir A.; Rutman, Grigory I.; and Logutov, Igor J., 4,259,534, Cl. 568-720.000.

Lauck, Robert M.; and Melachouris, Nicholas, to Stauffer Chemical Company. Preparation of comminuted meat products. 4,259,363, Cl. 426-646.000.

Laurent, Robert M.: *See*—
Tirtiaux, Robert; and Laurent, Robert M., 4,259,193, Cl. 252-33.000.

Lausch, Herbert: *See*—
Reuter, Gerhard; Schnabel, Wolfram; and Lausch, Herbert, 4,259,081, Cl. 23-293.00R.

Laux, Walter; Hebel, Rudolf; Artelt, Peter; Esfeld, Gerhard; and Jacob, Arnold, to Didier-Werke AG; and Stahlwerke Peine-Salzgitter AG. Ceramic burner. 4,259,064, Cl. 432-222.000.

Lawn-a-Mat Chemical & Equipment Corporation: *See*—
Lore, Pat; and Weber, Stanley L., 4,258,634, Cl. 111-10.000.

Lawson, William J., to Magnuson Engineers, Inc. Method and apparatus for trimming onions or like produce. 4,258,618, Cl. 99-636.000.

Lebet, Jean-Pierre. Production of rod-shape elements. 4,259,130, Cl. 156-180.000.

Le Chatelier, Jacques; and Kueny, Michel, to Societe Alsacienne de Constructions Mecaniques de Mulhouse. Open-end rotor with thread draw-off tube. 4,258,541, Cl. 57-58.890.

Lecouvreur, Paul: *See*—
Barneoud, Edouard R.; Guer, Michel; Lecouvreur, Paul; and Roumailhac, Jean, 4,258,937, Cl. 285-61.000.

Lee, Joseph K.; and Lee, Richard J. Air bag system for automobiles. 4,258,931, Cl. 280-734.000.

Lee, Richard J.: *See*—
Lee, Joseph K.; and Lee, Richard J., 4,258,931, Cl. 280-734.000.

Leech, Edward J.: *See*—
Nuzzi, Francis J.; Leech, Edward J.; Charm, Richard W.; and Polichette, Joseph, 4,259,113, Cl. 106-1.110.

Leet, Warren E.: *See*—
Hall, Arthur, III; and Leet, Warren E., 4,258,548, Cl. 60-445.000.

Lefferts, Peter: *See*—
Monticelli, Dennis M.; and Lefferts, Peter, 4,259,643, Cl. 330-288.000.

Legeza, Thomas B. Nozzle tip and method of manufacture. 4,258,885, Cl. 239-707.000.

Leichnitz, Kurt, to Dragerwerk Aktiengesellschaft. Testing tube construction for measuring sodium hydroxide and/or calcium oxide. 4,259,287, Cl. 422-59.000.

Leising, Walter F.; and Rasch, Kenneth R., to Xerox Corporation. Tapered donor roll applicator for roll fuser. 4,258,648, Cl. 118-60.000.

Leisner, Kenneth F.: *See*—
Roberts, Russell J.; and Leisner, Kenneth F., 4,258,907, Cl. 269-69.000.

Leitermann, Wulf, to Audi NSU Auto Union Aktiengesellschaft. Device for controlling the lubricating oil temperature of a combustion engine having an oil container. 4,258,679, Cl. 123-196.0AB.

Lemaire, Henri: *See*—
Boeuf, Jean-Marie; Gerest, Pierre; and Lemaire, Henri, 4,259,197, Cl. 252-62.580.

Lenz, Robert W.: *See*—
Johnson, Burnett H.; Chandler, John E.; and Lenz, Robert W., 4,259,475, Cl. 528-397.000.

Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab): *See*—
Binderup, Ernst T., 4,259,333, Cl. 424-246.000.

Leon, Gonzalo S.; and Fortier, Richard C., to Cabot Corporation. Stream splitter for spreading particulate material. 4,259,181, Cl. 209-231.000.

Leonard, Mark, to Hewlett-Packard Company. Optical comparator. 4,259,570, Cl. 250-214.00A.

Leone, Anthony J. Lobster trap. 4,258,496, Cl. 43-102.000.

Leopold & Co., Chem. Pharm. Fabrik Gesellschaft m. b. H.: *See*—
Kleinberger, Gunter, 4,259,353, Cl. 424-319.000.

Leopoldi, Norbert; and Heinrich, William P. Ear syringe. 4,258,714, Cl. 128-232.000.

Leplyanin, Gennady V.: *See*—
Nikitin, Jury E.; Murinov, Jury I.; Leplyanin, Gennady V.; Rafikov, Sagid R.; Bikchurina, Lilia K.; Tolstikov, Genrikh A.; Kazakov, Valery P.; Battalov, Edvard M.; Kolosnitsyn, Vladimir S.; Golodkova, Lyalya N.; Izmailov, Genrikh I.; and Markin, Gennady K., 4,259,229, Cl. 260-42.210.

Lepselter, Martin P.; and Sze, Simon M., to Bell Telephone Laboratories, Incorporated. High speed lateral bipolar transistor. 4,259,680, Cl. 357-35.000.

Lermann, Peter; Engelsmann, Dieter; Maas, Dieter; and Nicko, Reinhard, to AGFA-Gevaert, A.G. Still camera with an objective which can be retracted into the camera housing for dimensional compactness. 4,258,998, Cl. 354-173.000.

Lettinga, Jan, to N.V. Verenigde Instrumentenfabrieken Enraf-Nonius. Therapeutic traction apparatus for applying traction to a patient by means of a drawing cable. 4,258,707, Cl. 128-75.000.

Levai, Laszlo; Fazekas, Gabor; Petocz, Lujza; and Grasser, Katalin, to Egyt Gyogyszervegyeszeti Gyar. 1-Phenyl-2-amino-1,3-propanediol-N-aryloxyalkyl derivatives. 4,259,257, Cl. 260-501.180.

Lever Brothers Company: *See*—
Sims, Peter S.; Heslam, Robin S.; and Morris, Richard L., 4,259,200, Cl. 252-102.000.

LeVert, Francis E.; and Cox, Samson A., to United States of America, Energy. Directional gamma detector. 4,259,575, Cl. 250-336.000.

Levi Strauss & Co.: *See*—
Blessing, Hubert, 4,259,131, Cl. 156-201.000.

Levin, Herbert L., to RCA Corporation. Antenna deicing apparatus. 4,259,671, Cl. 343-704.000.

Lewis, Eugene W.: *See*—
Warden, Fuller; and Lewis, Eugene W., 4,259,071, Cl. 433-166.000.

Lewis, Robert W.: *See*—
Faxvog, Frederick R.; and Lewis, Robert W., 4,259,013, Cl. 356-237.000.

Lewyn, Lanny L., to Hughes Aircraft Company. Heart rate measurement system. 4,258,719, Cl. 128-690.000.

Leybold-Heraeus GmbH: *See*—
Aichert, Hans; Stark, Friedrich; Stephan, Herbert; and Hoffmann, Otto-Horst, 4,258,645, Cl. 118-50.000.

Leyendecker, Kuno: *See*—
Fricker, Peter; Leyendecker, Kuno; Scharl, Jurgen; Wagner, Helmut; Wunsch, Horst; and Scholz, Manfred, 4,258,521, Cl. 52-406.000.

Li, Norman N., to Exxon Research and Engineering Co. Novel liquid membrane formulations. 4,259,189, Cl. 260-29.6AN.

Liakumovich, Alexandr G.: *See*—
Gurvich, Yakov A.; Kumok, Simona T.; Latysheva, Galina G.; Rybak, Anna I.; Styskin, Evgeny L.; Liakumovich, Alexandr G.; Michurov, Jury I.; Filipova, Rufina A.; Yanshevsky, Vladimir A.; Rutman, Grigory I.; and Logutov, Igor J., 4,259,534, Cl. 568-720.000.

Liao, Henry H., to Xerox Corporation. Electronic rescreen technique for halftone pictures. 4,259,694, Cl. 358-283.000.

Liebert, Karl-Heinz; and Tischer, Werner, to Zahnradfabrik Friedrichshafen, AG. Control valve with two rotary valve elements supported in a housing and acted upon axially by pressure. 4,258,752, Cl. 137-625.210.

Liebert, Karl-Heinz; and Tischer, Werner, to Zahnradfabrik Friedrichshafen, AG. Steering valve with annular sealing element for radial annular gap. 4,258,902, Cl. 251-214.000.

Lieffers, William C., to Union Oil Company of California. Integrated method for pollution abatement and energy derivation from geothermal steam. 4,259,300, Cl. 423-224.000.

Lighton, Robert E.: *See*—
Gianforcaro, Gregory J.; Lighton, Robert E.; and Dougherty, Jerald M., 4,259,082, Cl. 23-302.00T.

Lilburn, Jennifer E., to Chevron Research Company. Lubricating oil compositions containing polyether dithiophosphates. 4,259,192, Cl. 252-32.70E.

Lillie, Christian: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; Pichler, Ludwig; Hoefke, Wolfgang; and Gaida, Wolfram, 4,259,346, Cl. 424-273.00R.

Lilly Industries Limited: *See*—
Baker, Stephen R.; Jamieson, William B.; and Ross, William J., 4,259,340, Cl. 424-269.000.
Ross, William J.; Todd, Alec; and Verge, John P., 4,259,343, Cl. 424-272.000.

Lim, Helong. Method of treatment of tuberculosis. 4,259,322, Cl. 424-150.000.

Limpaecher, Rudolf, to Avco Everett Research Laboratory, Inc. Fluidic switch. 4,258,753, Cl. 137-806.000.

Lin, Yang-I: *See*—
Lang, Stanley A., Jr.; Lin, Yang-I; and Ridge, David N., 4,259,504, Cl. 548-262.000.

Linde Aktiengesellschaft: *See*—
Benkmann, Christian, 4,259,091, Cl. 55-25.000.

Linden, Erkki O., to OY. Fiskars AB. Device for sharpening of scissors. 4,258,592, Cl. 76-82.200.

Lindmark, Richard C., Jr.: *See*—
Bunnelle, William L.; and Lindmark, Richard C., Jr., 4,259,220, Cl. 260-27.0BB.

Lindquist, John F., to Caterpillar Tractor Co. Track mounting tool and method. 4,258,463, Cl. 29-434.000.

Linford, Patrick F. T.: *See*—
Dean, Douglas J.; Linford, Patrick F. T.; and Savage, John, 4,259,684, Cl. 357-74.000.

Link, John A., to TFT, Ltd. Method for making dentures. 4,259,074, Cl. 433-214.000.

Linn, George T. Boat motor locking device. 4,258,559, Cl. 70-19.000.

Lion, Alfred, Jr.: *See*—
Lion, Herbert A.; and Lion, Alfred, Jr., 4,258,851, Cl. 209-700.000.

Lion Corporation: *See*—
Nakashima, Syozi; Ozawa, Tosiyuki; Ujiie, Takashi; Naganuma, Takeshi; Hayashi, Satoshi; and Ochiai, Yoshihito, 4,259,316, Cl. 424-52.000.

Lion Fat & Oil Co., Ltd., The: *See*—
Miyajima, Nobuyuki; Johna, Nobuo; Mizushima, Naoki; and Ohbu, Kazuo, 4,259,216, Cl. 252-545.000.
Yamada, Hisashi; Hayakawa, Kazuo; and Makise, Masayuki, 4,259,456, Cl. 525-3.000.

Lion, Herbert A.; and Lion, Alfred, Jr. Raisin separating machine. 4,258,851, Cl. 209-700.000.

Liotta, Ronald, to Exxon Research and Engineering Co. Pretreatment of solid, naturally-occurring carbonaceous material. 4,259,084, Cl. 44-1.00R.

Liotta, Ronald, to Exxon Research and Engineering Co. Formation of caking coals. 4,259,167, Cl. 208-8.0LE.

Liotta, Ronald, to Exxon Research and Engineering Co. Treatment of coal to increase yields and improve physical characteristics of coal liquefaction distillates and bottoms. 4,259,168, Cl. 208-8.0LE.

Liotta, Ronald, to Exxon Research and Engineering Co. Treatment of heavy coal fractions. 4,259,172, Cl. 208-46.000.

Liotta, Ronald; and Gorbaty, Martin L., to Exxon Research and Engineering Co. Treatment of coal liquids. 4,259,173, Cl. 208-46.000.

Lippiatt, Sidney A.: *See*—
Knight, David J.; and Lippiatt, Sidney A., 4,258,959, Cl. 303-7.000.

Lippmaa, Endel T.; Roose, Vambola I.; and Karu, Tynu K. Device for gradient heating of wire. 4,258,906, Cl. 266-250.000.

Lippmann, Irwin; Popli, Shankar D.; Miller, Larry G.; and Bell, Louis G., to A. H. Robins Company, Inc. Controlled release potassium dosage form. 4,259,315, Cl. 424-37.000.

Liquid Carbonic Corporation: *See*—
Venetucci, Jim M.; and Orfe, John C., 4,259,360, Cl. 426-231.000.
Liquid Controls Corporation: *See*—
Mitchell, Wallace F., 4,258,589, Cl. 74-796.000.
Liskov, Nathan A.; and Hendry, David L., to Raytheon Company. Multiplexer system providing improved bit count integrity. 4,259,738, Cl. 370-102.000.
Litauer, Andre, to Societe Anonyme dite: Les Cables de Lyon. Electric cable with a longitudinal strength member. 4,259,544, Cl. 174-102.00R.
Litton Resources Systems, Inc.: *See*—
Madeley, Paul E., 4,259,563, Cl. 219-121.0LJ.
Ljungcrantz, Billy, to Tetra Pak Developpement SA. Reclosable pour opening structure for a packaging container and method of making same. 4,258,876, Cl. 229-43.000.
Lobeck, Walter G., Jr.: *See*—
Wu, Yao H.; and Lobeck, Walter G., Jr., 4,259,238, Cl. 260-239.0BE.
Lochte, Glen E.; and Milberger, Lionel J., to FMC Corporation. Safety valve operating apparatus. 4,258,786, Cl. 166-72.000.
Lock Industrial Developments: *See*—
Groom, Simeon H., 4,258,951, Cl. 297-16.000.
Login, Robert B.; and Newkirk, David D., to BASF Wyandotte Corporation. Linear saturated polyesters of phosphoric acid and halogenated diols as flame-retardant additives and coatings. 4,259,222, Cl. 260-29.20E.
Login, Robert B., to BASF Wyandotte Corporation. Graft polyesters and sized textiles. 4,259,457, Cl. 525-39.000.
Logutov, Igor J.: *See*—
Gurvich, Yakov A.; Kumok, Simona T.; Latysheva, Galina G.; Rybak, Anna I.; Styskin, Evgeny L.; Liakumovich, Alexandr G.; Michurov, Jury I.; Filipova, Rufina A.; Yanshevsky, Vladimir A.; Rutman, Grigory I.; and Logutov, Igor J., 4,259,534, Cl. 568-720.000.
Loper, Edward J., Jr., to General Motors Corporation. Single axis crystal constrained temperature compensated digital accelerometer. 4,258,572, Cl. 73-497.000.
Lopez, Jaime: *See*—
Wynne, Francis E., Jr.; Lopez, Jaime; and Zaborowsky, Edward J., 4,259,178, Cl. 208-131.000.
Lore, Pat; and Weber, Stanley L., to Lawn-a-Mat Chemical & Equipment Corporation. Lawn combine with improved brake assembly. 4,258,634, Cl. 111-10.000.
L'Oreal: *See*—
Bugaut, Andree; and Vandenbossche, Jean-Jacques, 4,259,261, Cl. 564-99.000.
Lorenz, Kurt; Dungs, Horst; Koenigs, Hans B.; and Kurtz, Roman, to Carl Still GmbH & Co. KG, Firma; and Rheinische Braunkohlenwerke Aktiengesellschaft. Method of producing abrasion-proof coke forms from bituminous coal, brown coal or peat briquets. 4,259,157, Cl. 201-39.000.
Lorenz, Kurt: *See*—
Weber, Heinrich; Lorenz, Kurt; Dungs, Horst; Kurtz, Roman; and Kersting, Hans-Joachim, 4,259,158, Cl. 202-121.000.
Lorenzini, Robert A. Clarinet barrel with removable throat. 4,258,605, Cl. 84-386.000.
Lorquet, Robert, to Solvay & Cie. Particles based on polylactones derived from polyhydroxycarboxylic acids, and pulverulent compositions in which these particles are present. 4,259,203, Cl. 252-174.140.
Louis, Paul R.; Sorensen, Eugene R.; and Ballard, Thomas R., to Procter & Gamble Company, The. Method and apparatus for texturing a thermoplastic film. 4,259,286, Cl. 264-555.000.
Louthan, Jean H.; and Wynne, Ralph A., to Phillips Petroleum Company. Tapping apparatus. 4,258,742, Cl. 137-318.000.
Lowe, Lynnwood, to Pitney Bowes Inc. Gear assembly for driving a rack. 4,258,580, Cl. 74-109.000.
Lowey, Hans. Method and composition for the preparation of controlled long-acting pharmaceuticals. 4,259,314, Cl. 424-19.000.
Luckey, George W.; and Cleare, Henry M., to Eastman Kodak Company. Green-emitting X-ray intensifying screens. 4,259,588, Cl. 250-483.000.
Lukas, Helmut H.; Hvezda, Jaroslav M.; and Dalgleish, Jack F., to Northern Telecom Limited. Optical fibre connector. 4,258,977, Cl. 350-96.210.
Luksha, Eugene: *See*—
Feiman, Vladimir; and Luksha, Eugene, 4,259,420, Cl. 429-196.000.
Lundahl, Ezra C.; and Wiser, J. Gordon, to Ezra C. Lundahl, Inc. Variable stack feeder with hydraulic control. 4,258,886, Cl. 241-101.700.
Lundberg, Robert D.; and Makowski, Henry S., to Exxon Research & Engineering Co. Process for spinning fibers of ionic thermoplastic polymers. 4,259,284, Cl. 264-184.000.
Luo, Tatao, to American Cyanamid Company. Method for the aminoalkylation of phenol. 4,259,486, Cl. 544-173.000.
Lustig, Leopold P., to Brasseler. Hand tool for finishing dental fillings. 4,259,069, Cl. 433-144.000.
Lutz, Claus; Beha, Bernhard; and Nieter, Heinz G., to Lutz, Claus; Beha, Bernhard; Nieter, Heinz Gernot; and Steinhilber, Helmut. Soil cultivation implement. 4,258,635, Cl. 111-52.000.
Lytle, John D.: *See*—
Skinner, James R.; and Lytle, John D., 4,258,982, Cl. 350-252.000.
M.M.G., Inc.: *See*—
Ullman, Myron E., Jr., 4,258,464, Cl. 29-526.00R.
M. U. Engineering & Mfg., Inc.: *See*—
Skinner, James R.; and Lytle, John D., 4,258,982, Cl. 350-252.000.
Maas, Dieter: *See*—
Lermann, Peter; Engelsmann, Dieter; Maas, Dieter; and Nicko, Reinhard, 4,258,998, Cl. 354-173.000.
Mabuchi, Kenichi, to Mabuchi Motor Co. Ltd. Electrically-operated mobile model toy. 4,258,499, Cl. 46-232.000.
Mabuchi Motor Co. Ltd.: *See*—
Mabuchi, Kenichi, 4,258,499, Cl. 46-232.000.
MacDonald, David S.: *See*—
Valley, Robert A.; and MacDonald, David S., 4,259,547, Cl. 179-1.00B.
MacFee, Norman W., to Texiron Inc. Plastifying and molding articles from polymer strip. 4,259,272, Cl. 264-23.000.
Machleder, Warren H.; and Bollinger, Joseph M., to Rohm and Haas Company. Multipurpose hydrocarbon fuel and lubricating oil additive. 4,259,086, Cl. 44-58.000.
Mackey, Ralph E., to Washington Stove Works. Combination wood and coal stove. 4,258,692, Cl. 126-60.000.
Madeley, Paul E., to Litton Resources Systems, Inc. Method for dynamically tuning a seismic transducer. 4,259,563, Cl. 219-121.0LJ.
Maeda, Kuniyasu; Kaeriyama, Minoru; Matsui, Nobuo; Ishikawa, Hisao; Yamada, Shozo; and Okunuki, Susumu, to Nippon Soda Company, Ltd. Diphenylamine derivatives. 4,259,105, Cl. 71-108.000.
Magenheimer, John J.: *See*—
Hanselman, Raymond B.; Magenheimer, John J.; and Scott, Kenneth G., 4,259,115, Cl. 106-1.280.
Magic Mirror, Inc.: *See*—
Scott, Dale; and Deets, Roy L., 4,258,478, Cl. 434-94.000.
Magnetic Laboratories, Inc.: *See*—
McGonigal, James J., 4,259,653, Cl. 335-230.000.
Magnuson Engineers, Inc.: *See*—
Lawson, William J., 4,258,618, Cl. 99-636.000.
Magnuson, Robert M.: *See*—
Babb, Raymond E., 4,259,020, Cl. 356-402.000.
Maguire, Frederick J., to Charles D. Burnes Co., Inc. Photograph mount with dual support means. 4,258,489, Cl. 40-152.100.
Mahin, William E. Rear view mirror assembly. 4,258,979, Cl. 350-293.000.
Maisch, Wolfgang; and Constanty, Alain, to Robert Bosch GmbH. Switching control circuit, especially for motor vehicle engines. 4,258,682, Cl. 123-333.000.
Majors, Curtis O.; and Majors, Robert L. Fluid heated annular vibrating finishing apparatus. 4,258,507, Cl. 51-163.200.
Majors, Robert L.: *See*—
Majors, Curtis O.; and Majors, Robert L., 4,258,507, Cl. 51-163.200.
Makinen, Juho K.: *See*—
Aaltonen, Olavi A.; and Makinen, Juho K., 4,259,106, Cl. 75-7.000.
Makino, Shigeo; Watanabe, Shigeo; and Sogi, Toshiyuki, to Bridgestone Tire Company Limited. Pneumatic tires for heavy vehicles. 4,258,769, Cl. 152-209.00R.
Makise, Masayuki: *See*—
Yamada, Hisashi; Hayakawa, Kazuo; and Makise, Masayuki, 4,259,456, Cl. 525-3.000.
Makowski, Henry S.: *See*—
Lundberg, Robert D.; and Makowski, Henry S., 4,259,284, Cl. 264-184.000.
Malek, James R.; and Speier, John L., to Dow Corning Corporation. Method of reducing the number of microorganisms in a media and a method of preservation. 4,259,103, Cl. 71-67.000.
Mancini, Livio: *See*—
Moggi, Giovanni; and Mancini, Livio, 4,259,463, Cl. 525-331.000.
Mandelcorn, Lyon, to Westinghouse Electric Corp. Capacitor with ester dielectric fluid. 4,259,708, Cl. 361-318.000.
Mangal, Norman F.; and Swidler, Ronald, to Savin Corporation. Imaging surface discharge and cleaning apparatus for electrophotographic copier. 4,259,003, Cl. 355-3.0CH.
Mangood Corporation: *See*—
Jones, William F.; and Breingan, Ian M., 4,258,809, Cl. 177-1.000.
Mannesmann Aktiengesellschaft: *See*—
Kemmerling, Karl-Heinz, 4,259,137, Cl. 156-350.000.
Manning, John, to RMR Systems, Inc. Driver sleep or fatigue alarm. 4,259,665, Cl. 340-575.000.
Manos, Thomas; and Self, Craig, to Jet Spray Cooler, Inc. Timer circuit for vending machine. 4,258,837, Cl. 194-1.00N.
Mansukhani, Ishwar R., to Whittaker Corporation. Jet ink process. 4,259,675, Cl. 346-1.000.
Maran, Anthony G.: *See*—
Perry, Richard R.; Maran, Anthony G.; and Schols, Anton G., 4,259,252, Cl. 260-412.600.
Marco, Francis W., to Milliken Research Corporation. Fibrillated polyester textile fabric. 4,259,393, Cl. 428-224.000.
Mares, Frank; Jacobson, Stephen E.; and Tang, Reginald T., to Allied Chemical Corporation. Molybdenum and tungsten peroxo complexes useful as oxidation catalysts. 4,259,527, Cl. 568-311.000.
Margen, Peter H. E., to Studsvik Energiteknik AB. Fish pond plant. 4,258,661, Cl. 119-3.000.
Margolies, Arthur: *See*—
Fox, Jeffrey R.; Margolies, Arthur; and Moolenbeek, Rob, 4,259,594, Cl. 307-141.000.
Mariani, Rodolfo; and Pugliese, Francesco. Spirally-shaped hair roller. 4,258,732, Cl. 132-41.00R.
Marie, Gilbert, to ATO Chemie. Process for making alpha-olefin polymers or copolymers with high isotacticity index. 4,259,208, Cl. 252-429.00B.
Markey, William F.: *See*—
Walters, Noel E.; Markey, William F.; and Garman, Duane F., 4,258,776, Cl. 152-361.00R.

Markin, Gennady K.: *See*—
Nikitin, Jury E.; Murinov, Jury I.; Leplyanin, Gennady V.; Rafikov, Sagid R.; Bikchurina, Lilia K.; Tolstikov, Genrikh A.; Kazakov, Valery P.; Battalov, Edvard M.; Kolosnitsyn, Vladimir S.; Golodkova, Lyalya N.; Izmailov, Genrikh I.; and Markin, Gennady K., 4,259,229, Cl. 260-42.210.

Markovac, Uwe: *See*—
Gruden, Dusan; and Markovac, Uwe, 4,258,681, Cl. 123-277.000.

Marling, Douglas S. Space dividing assembly. 4,258,856, Cl. 220-22.300.

Marmo, Don; and Rocco, Frank L., to International Flavors & Fragrances Inc. Chewing gum containing flavor composition and flavor composition therefor. 4,259,355, Cl. 426-5.000.

Marquis, David M.: *See*—
Bakshi, Kiran R.; Marquis, David M.; and Paradis, Stephen G., 4,259,246, Cl. 260-346.750.

Marschner, Friedemann: *See*—
Voeste, Theodor; Schmidt, Hans J.; and Marschner, Friedemann, 4,259,536, Cl. 568-885.000.

Martelli, Maurizio. Five-suit game dice. 4,258,919, Cl. 273-146.000.

Martin, Herman H., Jr.: *See*—
Kidd, Earl H.; Martin, Herman H., Jr.; and Reid, Raymond R., 4,258,536, Cl. 56-17.500.

Martin, Patrick H.: *See*—
Dunn, James L., Jr.; Ward, John K.; and Martin, Patrick H., 4,258,649, Cl. 118-61.000.

Maruyama, Kunio, to Sumitomo Chemical Company, Limited; and Japan Exlan Company, Ltd. Process for producing carbon fibers. 4,259,307, Cl. 423-447.400.

Marvin, John, to American Original Corporation, The. Method and apparatus for separating solids. 4,259,179, Cl. 209-18.000.

Marvin M. Stark Research Foundation: *See*—
Soelberg, Kenneth B.; Stark, Marvin M.; and Yamaguchi, Akia, 4,259,070, Cl. 433-149.000.

Masaki, Akio: *See*—
Miura, Tatsuhiko; Toyoshima, Takefumi; Kikuchi, Kazuo; and Masaki, Akio, 4,258,820, Cl. 180-295.000.

Maschinenfabrik Carl Zangs Aktiengesellschaft: *See*—
Rolauffs, Hans; and Schafer, Helmut, 4,258,636, Cl. 112-121.120.

Masel, Ruben; and Valdshtein, George, to Koor Metals Ltd. Solar collectors. 4,258,699, Cl. 126-432.000.

Mashimo, Yukio: *See*—
Fukahori, Hidehiko; Iwashita, Tomonori; and Mashimo, Yukio, 4,258,997, Cl. 354-173.000.

Maskin AB Rapid: *See*—
Axelson, Sven-Inge, 4,259,031, Cl. 406-21.000.

Masstron Scale, Inc.: *See*—
Dillon, Benny N., 4,258,814, Cl. 177-126.000.
Susor, William C., 4,258,810, Cl. 177-128.000.

Masuhara, Eiichi: *See*—
Yamauchi, Junichi; Masuhara, Eiichi; Nakabayashi, Nobuo; Shibatani, Kyoichiro; and Wada, Tooru, 4,259,075, Cl. 433-217.000.
Yamauchi, Junichi; Masuhara, Eiichi; Nakabayashi, Nobuo; Shibatani, Kyoichiro; and Wada, Tooru, 4,259,117, Cl. 106-35.000.

Mathew, Jacob: *See*—
Wee, Maria Luz S.; Gilbert, Lawrence A.; and Mathew, Jacob, 4,259,199, Cl. 252-99.000.

Mathieu, Alain, to Lafarge Fondu International. Method of preparing a novel cement particularly suitable as a refractory cement. 4,259,121, Cl. 106-104.000.

Matier, William L.; and Comer, William T., to Mead Johnson & Company. Thiadiazine compound. 4,259,482, Cl. 544-8.000.

Matsubara, Noboru: *See*—
Takizawa, Masaaki; Takahashi, Kazuo; and Matsubara, Noboru, 4,258,671, Cl. 123-90.160.

Matsuda, Tosiaki: *See*—
Abe, Kazunobu; Tamura, Shoichi; and Matsuda, Tosiaki, 4,259,057, Cl. 425-463.000.

Matsuda, Yoshinobu: *See*—
Yasui, Seimei; Matsuda, Yoshinobu; Sagou, Masakazu; and Noguchi, Takanobu, 4,259,395, Cl. 428-248.000.

Matsufuji, Akihiro: *See*—
Kondoh, Syunichi; Matsufuji, Akihiro; Ohara, Yuji; and Umehara, Akira, 4,259,432, Cl. 430-281.000.

Matsui, Nobuo: *See*—
Maeda, Kuniyasu; Kaeriyama, Minoru; Matsui, Nobuo; Ishikawa, Hisao; Yamada, Shozo; and Okunuki, Susumu, 4,259,105, Cl. 71-108.000.

Matsumoto, Sadao: *See*—
Takanashi, Yukio; and Matsumoto, Sadao, 4,259,610, Cl. 313-417.000.

Matsuno, Isao; and Yamazoe, Hisamitsu, to Fuji Jukogyo Kabushiki Kaisha. Combustion system for internal combustion engines. 4,258,686, Cl. 123-568.000.

Matsuno, Takeshi; and Kobayashi, Takeshi, to Seiko Seiki Kabushiki Kaisha. Numerically controlled transfer machine. 4,259,627, Cl. 318-600.000.

Matsuo, Sohei: *See*—
Yamagata, Ryutaro; Matsuo, Sohei; Koyama, Shigeo; Kozuka, Nobuhiko; Tohi, Yasusuke; and Aizawa, Tatsuo, 4,259,008, Cl. 355-29.000.

Matsuo, Tatsuki; Ishizaki, Nobuo; and Suzuki, Yoichi, to Toyo Boseki Kabushiki Kaisha. Adsorptive material. 4,259,092, Cl. 55-78.000.

Matsushima, Yoshihisa; Sakakibara, Tadamori; Kaneko, Katsumi; Wada, Shozo; Ishii, Yoshio; Nagashima, Yukio; and Okamoto, Nobukazu, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for the production of aldehydes by hydroformylation. 4,259,530, Cl. 568-454.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Ishikawa, Kazuo; and Hosaka, Kazuo, 4,259,657, Cl. 338-22.00R.

Matsushita Graphic Communication Systems, Inc.: *See*—
Nakano, Ryunosuke, 4,259,695, Cl. 358-291.000.

Matsuyama, Atsuo: *See*—
Hatakeyama, Akira; Matsuyama, Atsuo; and Moritake, Yutaka, 4,259,625, Cl. 318-328.000.

Matsuyama, Iwao: *See*—
Tsukuda, Yasuo; Imoto, Katsuyuki; Susa, Kenzo; Matsuyama, Iwao; and Suganuma, Tsuneo, 4,259,101, Cl. 65-18.000.

Mattes, Hans G.: *See*—
Geary, John M.; and Mattes, Hans G., 4,259,728, Cl. 365-45.000.

Mattson, Richard W., to Eltra Corporation. Reversing relay for permanent magnet DC motor. 4,259,652, Cl. 335-128.000.

Matula, Jerry: *See*—
Barrus, Gordon B.; and Matula, Jerry, 4,258,623, Cl. 101-93.040.

Matyus, Peter: *See*—
Szilagyi, Geza; Kasztreiner, Endre; Kosary, Judit; Matyus, Peter; Huszti, Zsuzsa; Cseh, Gyorgy; Kenessey, Agnes; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, 4,259,328, Cl. 424-248.530.

Mauch, Jerry L.; and Aula, Howard A., to Ford Motor Company. Engine with integral mounted EGR cooler. 4,258,687, Cl. 123-570.000.

Maucher, Edmund; Hofer, Friedrich-Wilhelm; and Schwerin, Gunther, to Robert Bosch GmbH. Control apparatus for a hydraulic power consumer. 4,258,610, Cl. 91-445.000.

Mayer, Endre A., to Bendix Corporation, The. Dual solenoid vacuum modulator. 4,258,749, Cl. 137-596.170.

Mayer, Walter: *See*—
Husges, Gerd; and Mayer, Walter, 4,258,872, Cl. 226-91.000.

McAllister, Irvin L.; and Wagoner, Richard F. Infant bassinet and crib rocker. 4,258,446, Cl. 5-109.000.

McArthur, Dennis P., to Union Oil Company of California. Process for reducing sox emissions from catalytic cracking units. 4,259,175, Cl. 208-113.000.

McCartan, Thomas F.: *See*—
Cowen, Theodore A., Jr.; and McCartan, Thomas F., 4,258,964, Cl. 312-224.000.

McCarton, D. John; and Minto, Vrle T., to Minto, Vrle T. Stored heat cooking utensil. 4,258,695, Cl. 126-375.000.

McClung, Glen L.: *See*—
Jezek, Bruce W.; and McClung, Glen L., 4,258,462, Cl. 29-428.000.

McClure, Thomas W., to Aqua-Chem, Inc. Vapor compression distiller and method. 4,259,160, Cl. 203-1.000.

McConnell, Richard L.: *See*—
Trotter, Jimmy R.; McConnell, Richard L.; and Joyner, Frederick B., 4,259,470, Cl. 526-348.200.

McCord Corporation: *See*—
Melnyk, William, 4,258,460, Cl. 29-157.30B.

McCreery, James F.; and Jones, Dennis G., deceased (by Jones, Dolores H., executrix), to Kennametal Inc. Cutting insert. 4,259,033, Cl. 407-114.000.

McCrocklin, Teddy A.; McMillan, Carl E.; and Newman, William M., Sr. Rod holder for coating doctor system. 4,258,650, Cl. 118-101.000.

McCue, John P.; and Bramson, Mogens L., to SBR Lab, Inc. Biological/pharmaceutical fluid collection and mixing system and method. 4,258,723, Cl. 128-767.000.

McCulloch, Robert M.: *See*—
Jakobsen, Jakob S.; and McCulloch, Robert M., 4,259,621, Cl. 318-85.000.

McCullough, John E.: *See*—
Hidden, William P.; and McCullough, John E., 4,259,043, Cl. 418-55.000.

McEntire, Edward E., to Texaco Development Corp. Preparation of β-aminopropionamides. 4,259,259, Cl. 564-137.000.

McFadyen, Robert J.: *See*—
Harris, James E.; McFadyen, Robert J.; Peil, William; and Schmitz, Nicholas A., 4,259,716, Cl. 363-97.000.

McFarlane, James D.: *See*—
Patton, Franklin D.; and McFarlane, James D., 4,258,788, Cl. 166-185.000.

McGee, Eugene S., to Grow Group, Inc. Display cap. 4,258,857, Cl. 220-212.000.

McGonigal, James J., to Magnetic Laboratories, Inc. Electromagnetic reciprocating linear actuator with permanent magnet armature. 4,259,653, Cl. 335-230.000.

McGowan, Malissa. Clothes for the physically handicapped. 4,258,440, Cl. 2-114.000.

McGraw, Thomas E.; and Zimmerman, John C., to Halliburton Company. Oil well testing string bypass valve. 4,258,793, Cl. 166-315.000.

McKenzie, Neil D.; and Tift, Leo R. Scraper blade undercarriage mounting assembly. 4,258,797, Cl. 172-796.000.

McKewan, Arthur J., to Microdot Inc. Vibration resistant screw. 4,258,607, Cl. 411-417.000.

McMahon, Robert J. Universal holster assembly. 4,258,871, Cl. 224-192.000.

McMillan, Carl E.: *See*—
McCrocklin, Teddy A.; McMillan, Carl E.; and Newman, William M., Sr., 4,258,650, Cl. 118-101.000.

McTeague, Gerald E. Direct viewing storage target having an array of fluorescent dots for a cathode ray tube. 4,259,608, Cl. 313-398.000.

Mead Corporation, The: *See*—
Dubberly, Gregory T., 4,259,571, Cl. 250-223.00B.

Paranjpe, Suresh C.; Cox, Arthur; Scott, Burton W.; Nodov, Eugene; and Sutera, Richard, 4,259,696, Cl. 358-296.000.
Stout, James T., 4,258,844, Cl. 206-188.000.

Mead Johnson & Company: *See*—
Matier, William L.; and Comer, William T., 4,259,482, Cl. 544-8.000.
Wu, Yao H.; and Lobeck, Walter G., Jr., 4,259,238, Cl. 260-239.0BE.

Meade, Charles P. Step assisting device. 4,258,735, Cl. 135-65.000.

Meara, Kenneth J.: *See*—
Falxa, Martin L.; and Meara, Kenneth J., 4,259,438, Cl. 430-567.000.

Med General, Inc.: *See*—
Wymer, Carl G., 4,258,843, Cl. 206-63.300.

Medasonics: *See*—
Flowers, Edward P., 4,258,720, Cl. 128-694.000.

Medicor Muvek: *See*—
Csontos, Peter; Henter, Laszlo; Kalman, Laszlo; Kondor, Tibor; and Wein, Istvan, 4,259,581, Cl. 250-402.000.

Medtronic, Inc.: *See*—
O'Neill, Edward G., 4,258,725, Cl. 128-419.00P.

Meier, Stefan: *See*—
Brunnee, Curt; Franzen, Jochen; and Meier, Stefan, 4,259,572, Cl. 250-281.000.

Meijer, Roelf J.; and Ziph, Benjamin, to U.S. Philips Corporation. Wobble plate control for a variable piston displacement machine. 4,258,590, Cl. 74-839.000.

Meisei Chemical Works, Ltd.: *See*—
Tomita, Mikio; and Ueno, Athumi, 4,259,396, Cl. 428-265.000.

Melachouris, Nicholas: *See*—
Lauck, Robert M.; and Melachouris, Nicholas, 4,259,363, Cl. 426-646.000.

Melnyk, William, to McCord Corporation. Method of making a heat exchanger. 4,258,460, Cl. 29-157.30B.

Mendiratta, Sudhir K.: *See*—
Kaczur, Jerry J.; and Mendiratta, Sudhir K., 4,259,297, Cl. 423-55.000.

Merck & Co., Inc.: *See*—
Baldwin, John J., 4,259,327, Cl. 424-248.570.
Baldwin, John J.; and Ponticello, Gerald S., 4,259,341, Cl. 424-270.000.
Kang, Kenneth S., 4,259,477, Cl. 536-114.000.
Ponpipom, Mitree M.; Shen, Tsung-Ying; and Bugianesi, Robert L., 4,259,324, Cl. 424-180.000.
Steenbergen, Suzanna M.; and Young, Kevin M., 4,259,451, Cl. 435-253.000.

Meriden Molded Plastics, Inc.: *See*—
Grossman, Harry R., 4,259,196, Cl. 252-62.000.

Merlo, Armando M., to Merlo, Armando M.; and Balsamo, Angelo. Means and method for color photography printing. 4,259,423, Cl. 430-30.000.

Merz, Dietrich: *See*—
Winter, Heinrich; and Merz, Dietrich, 4,259,270, Cl. 264-8.000.

Mesch, Walter: *See*—
Huchler, Otto H.; Mesch, Walter; Winderl, Siegfried; Mueller, Herbert; and Hoffmann, Herwig, 4,259,531, Cl. 568-617.000.

Mesek, Frederick K., to Johnson & Johnson Baby Products Company. Absorbent fibrous structure. 4,259,387, Cl. 428-167.000.

Metal Bellows Corporation: *See*—
Tucker, Elton M.; and Prosl, Frank R., 4,258,711, Cl. 128-207.190.

Metallgesellschaft Aktiengesellschaft: *See*—
Reuter, Gerhard; Schnabel, Wolfram; and Lausch, Herbert, 4,259,081, Cl. 23-293.00R.
Scheiber, Werner; and Aalrust, Per O., 4,258,505, Cl. 51-7.000.
Voeste, Theodor; Schmidt, Hans J.; and Marschner, Friedemann, 4,259,536, Cl. 568-885.000.

Mezrich, Reuben S.: *See*—
Vilkomerson, David H. R.; and Mezrich, Reuben S., 4,258,576, Cl. 73-633.000.

Miani, Mario. Extrusion head for producing synthetic and the like textile yarns. 4,259,048, Cl. 425-72.00S.

Michl, Jan: *See*—
Kamenicky, Jan; Michl, Jan; Sindelar, Zdenek; Ibl, Stanislav; and Salivar, Jaroslav, 4,259,622, Cl. 318-86.000.

Michurov, Jury I.: *See*—
Gurvich, Yakov A.; Kumok, Simona T.; Latysheva, Galina G.; Rybak, Anna I.; Styskin, Evgeny L.; Liakumovich, Alexandr G.; Michurov, Jury I.; Filipova, Rufina A.; Yanshevsky, Vladimir A.; Rutman, Grigory I.; and Logutov, Igor J., 4,259,534, Cl. 568-720.000.

Microdot Inc.: *See*—
McKewan, Arthur J., 4,258,607, Cl. 411-417.000.

Midwest Research Institute: *See*—
Cadotte, John E., 4,259,183, Cl. 210-654.000.

Mihelich, Walter G.: *See*—
Beath, Laurence R.; and Mihelich, Walter G., 4,259,148, Cl. 162-24.000.

Milberger, Lionel J.: *See*—
Lochte, Glen E.; and Milberger, Lionel J., 4,258,786, Cl. 166-72.000.

Miles Laboratories, Inc.: *See*—
Carrico, Robert J.; and Ngo, That T., 4,259,232, Cl. 260-112.00R.
Carrico, Robert J.; and Ngo, That T., 4,259,233, Cl. 260-112.00B.
Chung, Koo H., 4,259,364, Cl. 426-656.000.
Gupta, Surendra K.; and Chaudhari, Panna R., 4,259,440, Cl. 435-15.000.
Kotick, Michael P.; and Polazzi, Joseph O., 4,259,329, Cl. 424-260.000.
Slager, James E.; and Brothers, Charles E., 4,259,243, Cl. 260-343.600.

Mill-Craft Housing Corporation: *See*—
Rehbein, Erwin G., 4,258,520, Cl. 52-522.000.

Miller, Donald E., to Continental Group, Inc., The. Press structure having shiftable stop. 4,258,562, Cl. 72-344.000.

Miller, Donald L., to Facet Enterprises, Inc. Spring operated cone clutch. 4,258,836, Cl. 192-84.00C.

Miller, George A.; and Chan, Hak-Foon, to Rohm and Haas Company. Cyanoaralkylheterocyclic compounds. 4,259,339, Cl. 424-269.000.

Miller, Gerald D., to Air Products and Chemicals, Inc. Flushable towelette. 4,258,849, Cl. 206-812.000.

Miller, Larry G.: *See*—
Lippmann, Irwin; Popli, Shankar D.; Miller, Larry G.; and Bell, Louis G., 4,259,315, Cl. 424-37.000.

Miller, Roy W., to Pullman Incorporated. Hopper car door locking arrangement. 4,259,036, Cl. 414-388.000.

Milliken Research Corporation: *See*—
Marco, Francis W., 4,259,393, Cl. 428-224.000.

Minami, Katsuji: *See*—
Tsujimoto, Susumu; Yamazaki, Hayao; Ozaki, Masayoshi; Kobayashi, Takehiro; Fujino, Toru; Yasuda, Mitsuo; Minami, Katsuji; and Itogawa, Zirou, 4,258,731, Cl. 132-9.000.

Minami, Setsuo: *See*—
Tateoka, Masamichi; Asano, Toshiaki; Minoura, Kazuo; and Minami, Setsuo, 4,259,004, Cl. 355-8.000.

Mine Safety Appliances Company: *See*—
Gunn, Charles A., 4,259,098, Cl. 55-478.000.

Mineral Process Licensing Corp. B.V.: *See*—
Turner, John H. W.; and Shackleton, Charles E. E., 4,259,298, Cl. 423-135.000.

Miners, Francis: *See*—
Flack, Frederick C.; Ellis, Richard E.; Bundy, Kenneth; Miners, Francis; and Selley, Wilfred G., 4,258,709, Cl. 128-136.000.

Minigrip, Inc.: *See*—
Yagi, Seiichi, 4,259,133, Cl. 156-244.110.

Minnesota Mining and Manufacturing Company: *See*—
Goettert, Edward J.; and Tiers, George V. D., 4,258,644, Cl. 118-31.500.

Minnick, L. John; Webster, William C.; and Smith, Charles L. Method of making shot from molten siliceous-aluminous composition. 4,259,271, Cl. 264-8.000.

Minolta Camera Kabushiki Kaisha: *See*—
Nakamura, Akiyoshi, 4,258,985, Cl. 350-459.000.
Tominaga, Shinji, 4,258,999, Cl. 354-268.000.
Uesugi, Kyozo; and Tanaka, Osamu, 4,258,996, Cl. 354-196.000.

Minoura, Kazuo: *See*—
Tateoka, Masamichi; Asano, Toshiaki; Minoura, Kazuo; and Minami, Setsuo, 4,259,004, Cl. 355-8.000.

Minto, Vrle T.: *See*—
McCarton, D. John; and Minto, Vrle T., 4,258,695, Cl. 126-375.000.

Mirtain, Henri J.; and Vervin, Jacques, to Uniroyal, a Societe Anonyme. Reinforcement belt for a pneumatic tire. 4,258,774, Cl. 152-361.0FP.

Mistry, Ramesh: *See*—
Young, Ian R.; and Mistry, Ramesh, 4,259,703, Cl. 360-113.000.

Mita Industrial Company Limited: *See*—
Ogino, Tetsuo; Sengo, Takashi; and Yoshiyama, Toshio, 4,259,565, Cl. 219-216.000.
Yamagata, Ryutaro; Matsuo, Sohei; Koyama, Shigeo; Kozuka, Nobuhiko; Tohi, Yasusuke; and Aizawa, Tatsuo, 4,259,008, Cl. 355-29.000.

Mitchell, James G.; and Mitchell, Winalee G. Cover and stand for bags. 4,258,891, Cl. 248-98.000.

Mitchell, Ralph W., to Joy Manufacturing Company. Cutting machine nose shoe. 4,258,957, Cl. 299-82.000.

Mitchell, Wallace F., to Liquid Controls Corporation. Planetary adjuster. 4,258,589, Cl. 74-796.000.

Mitchell, Winalee G.: *See*—
Mitchell, James G.; and Mitchell, Winalee G., 4,258,891, Cl. 248-98.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
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Kii, Masami, 4,259,555, Cl. 200-148.00R.
Kii, Masami, 4,259,556, Cl. 200-148.00R.

Mitsubishi Paper Mills, Ltd.: *See*—
Seino, Shunji; Nishiyama, Ryota; and Nozaki, Masaoki, 4,259,398, Cl. 428-283.000.
Tanaka, Akira; Yoshida, Akio; and Haino, Kozo, 4,259,439, Cl. 430-582.000.

Mitsui Petrochemical Industries Ltd.: *See*—
Kajiura, Hirokazu; Murata, Kazuhiko; Oda, Hidekuni; and Yasutake, Tatsuo, 4,259,468, Cl. 526-283.000.

Mitsui, Yoshihiro, to Shinshu Seiki Kabushiki Kaisha; and Kabushiki Kaisha Suwa Seikosha. Miniaturized printer. 4,258,624, Cl. 101-99.000.

Miura, Takamaro: *See*—
Takematsu, Tetsuo; Segawa, Hirozo; Miura, Takamaro; Ataka, Toshiei; Chatani, Michio; and Nakamura, Akira, 4,259,489, Cl. 544-336.000.

Miura, Tatsuhiko; Toyoshima, Takefumi; Kikuchi, Kazuo; and Masaki, Akio, to Honda Giken Kogyo Kabushiki Kaisha. Sub-frame supporting apparatus for an automobile. 4,258,820, Cl. 180-295.000.

Miville, Rolland: *See*—
LaPointe, 4,258,632, Cl. 109-59.00R.

Mixon, James A. Sludge thickening apparatus. 4,259,185, Cl. 210-195.300.

Miyajima, Nobuyuki; Johna, Nobuo; Mizushima, Naoki; and Ohbu, Kazuo, to Lion Fat & Oil Co., Ltd., The. Process for producing liquid detergent composition. 4,259,216, Cl. 252-545.000.

Miyake, Yoshihiro, to Hokushin Electric Works, Ltd. Dissolved oxygen probe. 4,259,165, Cl. 204-195.00P.

Miyatake, Fumio: *See*—
Saito, Kazuhisa; Miyatake, Fumio; and Shibata, Kunio, 4,259,397, Cl. 428-288.000.

Mizobuchi, Yuzo; Sato, Masamichi; and Takahashi, Tsunehiko, to Fuji Photo Film Co., Ltd. Method for producing disk-recording plates. 4,259,433, Cl. 430-296.000.

Mizuno, Tiaki: *See*—
Ariyoshi, Hiromi; and Mizuno, Tiaki, 4,259,659, Cl. 340-73.000.

Mizushima, Naoki: *See*—
Miyajima, Nobuyuki; Johna, Nobuo; Mizushima, Naoki; and Ohbu, Kazuo, 4,259,216, Cl. 252-545.000.

Mjolkcentralen Arla Ekonomisk Forening: *See*—
Wallgren, Kurt; and Nilsson, Tage, 4,259,356, Cl. 426-42.000.

Mobay Chemical Corporation: *See*—
Dunlap, Kenneth L.; and Knofel, Hartmut, 4,259,526, Cl. 564-331.000.

Mobil Oil Corporation: *See*—
Bridger, Robert F., 4,259,254, Cl. 260-429.00R.
Chen, Nai Y.; and Garwood, William E., 4,259,174, Cl. 208-111.000.
Chu, Chin-Chiun, 4,259,537, Cl. 585-467.000.
Graham, Ronald I.; and Hicks, Edwin A., 4,259,170, Cl. 208-33.000.
Habib, Edward T., Jr., 4,258,955, Cl. 299-5.000.
Piotrowski, Alfred B.; and Davis, Robert H., 4,259,206, Cl. 252-34.700.

Mobile Oil Corporation: *See*—
Pelrine, Bruce P., 4,259,306, Cl. 423-325.000.

Mochizuki, Noritaka, to Canon Kabushiki Kaisha. Slit illuminating device. 4,259,711, Cl. 362-304.000.

Mode, Duane; and Dutcher, Daniel P., to Champion International Corporation. Rimmed simplex carton with tucked ends and blank for forming same. 4,258,881, Cl. 229-34.0HW.

Modine Manufacturing Company: *See*—
Kao, Stephen S. T., 4,258,782, Cl. 165-109.00T.

Moeder, Helmut; and Schirmer, Guenter, to Robert Bosch GmbH. Series-wound electric motor and control system for governing the speed thereof. 4,259,623, Cl. 318-249.000.

Moench, Jerry D., to Motorola, Inc. Quiet row selection circuitry. 4,259,731, Cl. 365-206.000.

Moggi, Giovanni; and Mancini, Livio, to Montedison S.p.A. Vulcanizable compositions based on copolymers of vinylidene fluoride and containing vulcanization accelerators which are aminophosphinic compounds. 4,259,463, Cl. 525-331.000.

Moline Corporation: *See*—
Drysh, Leo I., 4,258,868, Cl. 222-602.000.

Mollers Maschinenfabrik GmbH: *See*—
Aka, Peter; and Grunert, Manfred, 4,258,533, Cl. 53-557.000.

Molloy, Bryan B.; and Steinberg, Mitchell I., to Eli Lilly and Company. Method of treating arrhythmia. 4,259,354, Cl. 424-329.000.

Monahan, John F.; Smiley, Charles F.; and Wymer, Arthur C., to Harris Corporation. Beam current control system for image pickup tube. 4,259,691, Cl. 358-219.000.

Monsanto Company: *See*—
Serlin, Irving, 4,259,425, Cl. 430-56.000.

Montag, Bernhard: *See*—
Opitz, Heinrich; and Montag, Bernhard, 4,259,431, Cl. 430-199.000.

Montedison S.p.A.: *See*—
Moggi, Giovanni; and Mancini, Livio, 4,259,463, Cl. 525-331.000.

Month, Alfred; and Benner, Timothy E., to RCA Corporation. Pick-up tube having light controllable furcated light pipes. 4,259,609, Cl. 313-372.000.

Monticelli, Dennis M.; and Lefferts, Peter, to National Semiconductor Corporation. Current gain amplifier cell. 4,259,643, Cl. 330-288.000.

Montoya, Raul. Ground anchor. 4,259,030, Cl. 405-303.000.

Mookherjee, Braja D.: *See*—
Shu, Chi-Kuen; Mookherjee, Braja D.; and Vock, Manfred H., 4,259,507, Cl. 549-34.000.
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,258,727, Cl. 131-9.000.

Moolenbeek, Rob: *See*—
Fox, Jeffrey R.; Margolies, Arthur; and Moolenbeek, Rob, 4,259,594, Cl. 307-141.000.

Moon, James: *See*—
Decker, Elmer L.; and Moon, James, 4,258,566, Cl. 73-141.00R.

Moore, Glenn E., to Dover Corporation. Arrangement for sensing the presence of liquid in a vapor line. 4,258,760, Cl. 141-206.000.

Moore, L. Frank; and Price, George M., to Frymaster Corporation, The. Positive reset safety control circuit for frying apparatus. 4,259,567, Cl. 219-327.000.

Moore, Thomas S.; and Smith, Terrence, to Ford Motor Company. Fabricated load support structural member. 4,258,932, Cl. 280-781.000.

Morgan, Howard W., to Filter Specialists, Inc. Fluid filter housing and filter bag seal. 4,259,188, Cl. 210-448.000.

Mori, Masahiko: *See*—
Hanaoka, Seiji; Mori, Masahiko; and Kobayashi, Takao, 4,259,026, Cl. 400-124.000.

Mori, Osamu; Yoshizawa, Takanao; and Samata, Kozo, to Bridgestone Tire Company Limited. Apparatus for supporting floor plates above substrate. 4,258,516, Cl. 52-126.000.

Mori, Toshio: *See*—
Uchiyama, Masami; Fuzimori, Toru; and Mori, Toshio, 4,259,603, Cl. 310-68.00B.

Morino, Hideki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Power transmission unit for an automotive vehicle. 4,258,587, Cl. 74-700.000.

Morisawa, Yasuhiro; Konishi, Kiyoshi; and Kataoka, Mitsuru, to Sankyo Company Limited. Iodopropargyl derivatives, their use and preparation. 4,259,350, Cl. 424-308.000.

Moritake, Yutaka: *See*—
Hatakeyama, Akira; Matsuyama, Atsuo; and Moritake, Yutaka, 4,259,625, Cl. 318-328.000.

Morokawa, Shigeru, to Citizen Watch Co., Ltd. Voltage conversion system for electronic timepiece. 4,259,715, Cl. 363-60.000.

Morris, Richard L.: *See*—
Sims, Peter S.; Heslam, Robin S.; and Morris, Richard L., 4,259,200, Cl. 252-102.000.

Morris, Roy; and Pickering, Terence J., to USM Corporation. Area measuring machine. 4,259,590, Cl. 250-560.000.

Morris, Roy; and Pickering, Terence J., to USM Corporation. Area measuring machine. 4,259,591, Cl. 250-560.000.

Morse, Richard R., to Outboard Marine Corporation. Grass catcher bag. 4,258,538, Cl. 56-202.000.

Moschter, Erwin, to Dynamit Nobel Aktiengesellschaft. Method for the flame bonding of a molded component of soft polyvinyl chloride with a molded component of polyolefin. 4,259,408, Cl. 428-424.600.

Moses, Edward L., Jr.: *See*—
Richey, Vernon T.; and Moses, Edward L., Jr., 4,258,804, Cl. 175-325.000.

Moskovich, Jacob, to Vivitar Corporation. Retrofocus lens. 4,258,980, Cl. 350-463.000.

Moss, Gerald, to United States of America, Environmental Protection Agency. Distributing fluids into fluidized beds. 4,259,088, Cl. 48-212.000.

Motorola, Inc.: *See*—
Moench, Jerry D., 4,259,731, Cl. 365-206.000.
Stein, Marc T., 4,259,601, Cl. 307-359.000.

Mougin, Georges L., to ITT Limited. Large-scale protective device for tabular icebergs or floating structures. 4,258,640, Cl. 114-219.000.

Mudge, Craig: *See*—
Kaman, Charles H.; Sullivan, Daniel T.; O'Loughlin, James F.; and Mudge, Craig, 4,259,718, Cl. 364-200.000.

Mueller Co.: *See*—
Sands, Robert E., 4,258,941, Cl. 285-197.000.

Mueller, Herbert: *See*—
Huchler, Otto H.; Mesch, Walter; Winderl, Siegfried; Mueller, Herbert; and Hoffmann, Herwig, 4,259,531, Cl. 568-617.000.

Mueller, Hermann A.: *See*—
Boeing, Joseph; and Mueller, Hermann A., 4,259,186, Cl. 210-198.200.

Muetterties, Andrew J.: *See*—
Harms, Jack L.; Genese, Joseph N.; and Muetterties, Andrew J., 4,258,712, Cl. 128-214.00G.

Mukumoto, Shigeyuki. Automatic meat arranging device for automatic meat cutting machine. 4,258,530, Cl. 53-517.000.

Muller, Hans, to Grapha-Holding AG. Apparatus for converting a stream of partly overlapping sheets into a row of overlapping sheets. 4,258,909, Cl. 271-181.000.

Muller, Heinz: *See*—
Kleber, Rolf; and Muller, Heinz, 4,259,078, Cl. 8-115.600.

Munch, John H.: *See*—
Buriks, Rudolf S.; Fauke, Allen R.; and Munch, John H., 4,259,464, Cl. 525-480.000.

Munro, James A., to Sperry Corporation. Agricultural baler. 4,258,540, Cl. 56-341.000.

Murata, Kazuhiko: *See*—
Kajiura, Hirokazu; Murata, Kazuhiko; Oda, Hidekuni; and Yasutake, Tatsuo, 4,259,468, Cl. 526-283.000.

Murata, Moriyasu; and Suzuki, Akira, to Kao Soap Co., Ltd. Detergent composition containing a fabric softening cationic surfactant and an ether sulfate having a specific oxyalkylene group. 4,259,215, Cl. 252-528.000.

Murinov, Jury I.: *See*—
Nikitin, Jury E.; Murinov, Jury I.; Leplyanin, Gennady V.; Rafikov, Sagid R.; Bikchurina, Lilia K.; Tolstikov, Genrikh A.; Kazakov, Valery P.; Battalov, Edvard M.; Kolosnitsyn, Vladimir S.; Golodkova, Lyalya N.; Izmailov, Genrikh I.; and Markin, Gennady K., 4,259,229, Cl. 260-42.210.

Murphey, Joseph R., to Halliburton Company. Process involving breaking of aqueous gel of neutral polysaccharide polymer. 4,259,205, Cl. 252-326.000.

Murphy, Alan P., to Procter & Gamble Company, The. Laundry detergent compositions having enhanced greasy and oily soil removal performance. 4,259,217, Cl. 252-547.000.

Murphy, Walter T., to B. F. Goodrich Company, The. Rotocasting process for producing rubbery reinforced sport balls and play balls. 4,258,917, Cl. 273-65.0ED.

Murray, Douglas J. Combination stepladder and load lifting apparatus. 4,258,826, Cl. 182-20.000.

Musgrave, Daniel D. Interacting springs. 4,258,495, Cl. 42-50.000.

Musschoot, Albert, to General Kinematics Corporation. Method and apparatus for conveying very fine solid material. 4,258,779, Cl. 165-1.000.

Nabeta, Teiichi: *See*—
Iwata, Yasuhiro; Usami, Kiyoshu; Naganoma, Masanori; Nabeta, Teiichi; and Kojima, Yasuhumi, 4,259,722, Cl. 364-424.000.

Nagai, Hiroshi; and Okamoto, Tsuneo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Apparatus for continuous recovery of solvent. 4,259,094, Cl. 55-181.000.

Naganoma, Masanori: *See*—
Iwata, Yasuhiro; Usami, Kiyoshu; Naganoma, Masanori; Nabeta, Teiichi; and Kojima, Yasuhumi, 4,259,722, Cl. 364-424.000.

Naganuma, Takeshi: *See*—
Nakashima, Syozi; Ozawa, Tosiyuki; Ujiie, Takashi; Naganuma, Takeshi; Hayashi, Satoshi; and Ochiai, Yoshihito, 4,259,316, Cl. 424-52.000.

Nagashima, Yukio: *See*—
Matsushima, Yoshihisa; Sakakibara, Tadamori; Kaneko, Katsumi; Wada, Shozo; Ishii, Yoshio; Nagashima, Yukio; and Okamoto, Nobukazu, 4,259,530, Cl. 568-454.000.

Nagel, Dieter H.: *See*—
Weiler, Gerhard H.; and Nagel, Dieter H., 4,258,867, Cl. 222-507.000.

Naiman, Michael I.; Knepper, J. Irvine; and Thompson, Neil E. S., to Petrolite Corporation. Antistats containing acrylonitrile copolymers and polyamines. 4,259,087, Cl. 44-62.000.

Najarian, George L.; and Sabri, Zaker I., to American Dental Association Health Foundation. Fluorochemical vapor autoclave. 4,259,293, Cl. 422-109.000.

Nakabayashi, Nobuo: *See*—
Yamauchi, Junichi; Masuhara, Eiichi; Nakabayashi, Nobuo; Shibatani, Kyoichiro; and Wada, Tooru, 4,259,075, Cl. 433-217.000.
Yamauchi, Junichi; Masuhara, Eiichi; Nakabayashi, Nobuo; Shibatani, Kyoichiro; and Wada, Tooru, 4,259,117, Cl. 106-35.000.

Nakagawa, Hirohide: *See*—
Nishimura, Kosuke; Nakagawa, Hirohide; and Haneda, Isamu, 4,259,668, Cl. 340-711.000.

Nakagawa, Koichiro: *See*—
Iwakane, Takanobu; Kai, Tohru; Hirose, Kenji; and Nakagawa, Koichiro, 4,259,628, Cl. 318-799.000.

Nakagawa, Tadashi: *See*—
Kitai, Kiyoshi; Nakagawa, Tadashi; and Ishida, Hiroaki, 4,258,988, Cl. 354-25.000.
Watanabe, Masanori; Nakagawa, Tadashi; Nemoto, Ichiro; Onda, Eiichi; and Koyama, Mitsuo, 4,259,001, Cl. 354-266.000.

Nakaji, Osamu; Takashima, Seisuke; and Nakamura, Seishiro, to Kuraray Co., Ltd. Method of and system for treating waste anesthetic gas. 4,259,303, Cl. 423-239.000.

Nakamatsu, Yoshiro. Acoustic device with floating vibrating means. 4,259,550, Cl. 179-115.5VC.

Nakamoto, Koji: *See*—
Oikawa, Hiroshi; Katagiri, Ken; Kawaguchi, Harumoto; Kitabatake, Tetsuo; and Nakamoto, Koji, 4,259,321, Cl. 424-120.000.

Nakamura, Akira: *See*—
Takematsu, Tetsuo; Segawa, Hirozo; Miura, Takamaro; Ataka, Toshiei; Chatani, Michio; and Nakamura, Akira, 4,259,489, Cl. 544-336.000.

Nakamura, Akiyoshi, to Minolta Camera Kabushiki Kaisha. Inverted telephoto type wide angle lens system. 4,258,985, Cl. 350-459.000.

Nakamura, Hiroaki; Kumita, Izumi; Sugita, Yoshiji; and Takagi, Hiedo, to Nippon Soda Company, Ltd. Protein adsorbent and process for the purification of urokinase. 4,259,448, Cl. 435-215.000.

Nakamura, Kazuo: *See*—
Tokutomi, Seijiro; Ogawa, Ryota; Ohishi, Michiro; Nakamura, Kazuo; Jyojiki, Masao; and Tachihara, Satoru, 4,258,989, Cl. 354-25.000.

Nakamura, Kenji: *See*—
Ishikawa, Masao; Nakamura, Kenji; and Ajimine, Akio, 4,258,643, Cl. 116-286.000.

Nakamura, Mitsuo: *See*—
Arai, Toshio; Inoue, Shunzo; Kuroda, Yasuo; Kasuya, Michio; Konishi, Motofumi; and Nakamura, Mitsuo, 4,259,007, Cl. 355-27.000.

Nakamura, Norihiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Variable-venturi carburetor. 4,259,266, Cl. 261-44.00C.

Nakamura, Norimitsu, to Tokyo Shibaura Denki Kabushiki Kaisha. Information processor. 4,259,717, Cl. 364-200.000.

Nakamura, Seishiro: *See*—
Nakaji, Osamu; Takashima, Seisuke; and Nakamura, Seishiro, 4,259,303, Cl. 423-239.000.

Nakamura, Yasuhiko; and Yamakawa, Yoshio, to Nippondenso Co., Ltd. Fuel vapor adsorption type air cleaner element for internal combustion engine. 4,259,096, Cl. 55-316.000.

Nakane, Ryohei; Isomura, Shohei; Okita, Koichi; Kamijo, Eiji; and Nishimoto, Tatsuya, to Rikagaku Kenkyusho; and Sumitomo Electric Industries, Ltd. Catalyst for concentrating hydrogen isotopes and process for producing a support therefor. 4,259,209, Cl. 252-430.000.

Nakanishi, Kaoru; and Kanchi, Masahiro, to Sharp Kabushiki Kaisha. Multi-picture tuning scheme of television receiver. 4,259,690, Cl. 358-183.000.

Nakano, Ryunosuke, to Matsushita Graphic Communication Systems, Inc. Facsimile sheet clamping device. 4,259,695, Cl. 358-291.000.

Nakano, Tatsuo; Hori, Shozo; and Kishi, Ikuji, to Denki Kagaku Kogyo Kabushiki Kaisha. Hardenable composition containing diisopropylbenzene dihydroperoxide. 4,259,462, Cl. 525-263.000.

Nakaoka, Ichiro: *See*—
Ando, Wataru; and Nakaoka, Ichiro, 4,259,524, Cl. 562-526.000.

Nakasaki, Eiji, to Sumitomo Rubber Industries, Ltd. Air valve tightening construction for tire tube. 4,258,772, Cl. 152-349.000.

Nakashima, Katsushi, to Aisin Seiki Co., Ltd. Master cylinder. 4,258,549, Cl. 60-588.000.

Nakashima, Syozi; Ozawa, Tosiyuki; Ujiie, Takashi; Naganuma, Takeshi; Hayashi, Satoshi; and Ochiai, Yoshihito, to Lion Corporation. Oral composition for caries prophylaxis. 4,259,316, Cl. 424-52.000.

Nakayama, Harutsugu: *See*—
Imanishi, Shozo; Umezawa, Fumiaki; Ishida, Toshiya; and Nakayama, Harutsugu, 4,259,052, Cl. 425-135.000.

Nakayama, Osamu, to Bridgestone Tire Company Limited. Pneumatic tire having an improved uneven wear resistance. 4,258,691, Cl. 152-209.00R.

Nalco Chemical Company: *See*—
Flowers, William F., 4,259,269, Cl. 261-151.000.

Nall, Joe H.: *See*—
Traill, Philip J.; and Nall, Joe H., 4,258,861, Cl. 221-213.000.

Namioka, Kenta: *See*—
Arisaka, Kunio; and Namioka, Kenta, 4,258,990, Cl. 354-29.000.

Naoi, Noriyuki: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Ishizuka, Masaaki; Watanabe, Kiyoshi; Yamashita, Toshiaki; Naoi, Noriyuki; and Hidaka, Takayoshi, 4,259,319, Cl. 424-117.000.

Narita, Kinjo. Ornament for burial monuments. 4,259,381, Cl. 428-13.000.

Narsavage, Stephen T.: *See*—
Vine, Raymond W.; and Narsavage, Stephen T., 4,259,389, Cl. 428-192.000.

National Research Development Corporation: *See*—
Fox, Colin H. J.; and Burdess, James S., 4,258,577, Cl. 74-5.60R.

National Semiconductor Corporation: *See*—
Monticelli, Dennis M.; and Lefferts, Peter, 4,259,643, Cl. 330-288.000.

National Steel Corporation: *See*—
Keller, Robert N., 4,259,385, Cl. 428-135.000.

NCR Corporation: *See*—
Passer, Barry E.; and Sculley, George A., 4,259,569, Cl. 235-463.000.

Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, to Roussel Uclaf. Method for using m-trifluoromethylphenyl-piperidines. 4,259,337, Cl. 424-267.000.

Negin, Gennady V.: *See*—
Pryamilov, Jury S.; Nikolaichev, Nikolai A.; Negin, Gennady V.; Duntsev, Vsevolod Y.; Krylov, Robert M.; and Shiryaev, Vladimir I., 4,259,153, Cl. 176-30.000.

Negishi, Takao; and Tomiita, Kazuo, to Toray Industries, Inc. Bundle of fibrous elements. 4,258,542, Cl. 57-206.000.

Nelson, David P. Combined saliva ejector, tongue retractor and throat protector. 4,259,067, Cl. 433-93.000.

Nemoto, Ichiro: *See*—
Watanabe, Masanori; Nakagawa, Tadashi; Nemoto, Ichiro; Onda, Eiichi; and Koyama, Mitsuo, 4,259,001, Cl. 354-266.000.

Ness, Richard A. Flexible dispensing container having internal container wall rupturing means. 4,258,863, Cl. 222-83.000.

Neuenfeldt, Walter; Sulic, Milan; and Pollak, Gerd, to Kraftwerk Union Aktiengesellschaft. Device for coupling pipelines in reactor pressure vessels, preferably the pipelines of the feedwater manifold. 4,259,156, Cl. 176-87.000.

New Fibers International: *See*—
Gordy, John, 4,259,147, Cl. 162-12.000.
Gordy, John, 4,259,151, Cl. 162-239.000.

New Generation Foods, Inc.: *See*—
Spicer, Arnold, 4,259,359, Cl. 426-62.000.

Newcomb, Donald R., to Butternut Electronics. Multi-band vertical antenna. 4,259,672, Cl. 343-722.000.

Newkirk, David D.; and Thir, Basil, to BASF Wyandotte Corporation. Synthetic fibers lubricated with heteric copolymer of tetrahydrofuran and C_3 to C_4 alkylene oxide. 4,259,405, Cl. 428-395.000.

Newkirk, David D.: *See*—
Login, Robert B.; and Newkirk, David D., 4,259,222, Cl. 260-29.20E.

Newman, Howard: *See*—
Kende, Andrew S.; and Newman, Howard, 4,259,476, Cl. 536-17.00A.

Newman, William M., Sr.: *See*—
McCrocklin, Teddy A.; McMillan, Carl E.; and Newman, William M., Sr., 4,258,650, Cl. 118-101.000.

Newmont Exploration Limited: *See*—
Guay, Wilbur J., 4,259,107, Cl. 75-105.000.

Ngan, Yiu C.: *See*—
Chang, Yu-Wen; and Ngan, Yiu C., 4,259,647, Cl. 331-96.000.

Ngo, That T.: *See*—
Carrico, Robert J.; and Ngo, That T., 4,259,232, Cl. 260-112.00R.
Carrico, Robert J.; and Ngo, That T., 4,259,233, Cl. 260-112.00B.

Nichols, George M.: *See*—
Albertson, Clarence E.; Nichols, George M.; and Rasmussen, John N., 4,258,783, Cl. 165-133.000.

Nicholson, Dean. Control device for a liquid level maintaining system or the like. 4,258,745, Cl. 137-403.000.

Nicko, Reinhard: *See*—
Lermann, Peter; Engelsmann, Dieter; Maas, Dieter; and Nicko, Reinhard, 4,258,998, Cl. 354-173.000.
Niederer, Lee H.; and Niederer, Thomas O., to Otto Niederer Sons, Inc. Egg transfer bar. 4,258,839, Cl. 198-478.000.
Niederer, Thomas O.: *See*—
Niederer, Lee H.; and Niederer, Thomas O., 4,258,839, Cl. 198-478.000.
Nielsen, Leif: *See*—
Huelle, Zbigniew R.; and Nielsen, Leif, 4,258,899, Cl. 251-11.000.
Nierman, Henri J. M. Nondeformable container. 4,258,847, Cl. 206-504.000.
Nieter, Heinz G.: *See*—
Lutz, Claus; Beha, Bernhard; and Nieter, Heinz G., 4,258,635, Cl. 111-52.000.
Nieter, Heinz Gernot: *See*—
Lutz, Claus; Beha, Bernhard; and Nieter, Heinz G., 4,258,635, Cl. 111-52.000.
Niggemann, Fritz, to Busch & Muller. Rear-view mirror for automotive vehicles. 4,258,894, Cl. 248-483.000.
Niimi, Koji; and Kotah, Mitsumi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic keyboard musical instrument of wave memory reading type. 4,258,602, Cl. 84-1.010.
Niino, Tuyoshi; and Uchiyama, Yuichi, to Hitachi, Ltd. Nuclear reactor containment structure. 4,259,154, Cl. 176-38.000.
Nikitin, Jury E.; Murinov, Jury I.; Leplyanin, Gennady V.; Rafikov, Sagid R.; Bikchurina, Lilia K.; Tolstikov, Genrikh A.; Kazakov, Valery P.; Battalov, Edvard M.; Kolosnitsyn, Vladimir S.; Golodkova, Lyalya N.; Izmailov, Genrikh I.; and Markin, Gennady K. Process for producing colored polymer. 4,259,229, Cl. 260-42.210.
Nikolaichev, Nikolai A.: *See*—
Pryamilov, Jury S.; Nikolaichev, Nikolai A.; Negin, Gennady V.; Duntsev, Vsevolod Y.; Krylov, Robert M.; and Shiryaev, Vladimir I., 4,259,153, Cl. 176-30.000.
Nilssen, Ole K. Electronic assembly. 4,259,618, Cl. 315-360.000.
Nilsson, Per-Erik: *See*—
Franzon, Hans A.; Gustafsson, Jan K.; and Nilsson, Per-Erik, 4,258,811, Cl. 177-200.000.
Nilsson, Tage: *See*—
Wallgren, Kurt; and Nilsson, Tage, 4,259,356, Cl. 426-42.000.
Nippon Electric Co., Ltd.: *See*—
Nomura, Tadashi; and Inada, Hiroshi, 4,259,626, Cl. 318-599.000.
Ohkubo, Toshio; Katoh, Hidehiko; and Kajiwara, Yuji, 4,259,564, Cl. 219-216.000.
Tokushige, Kazuo, 4,259,729, Cl. 365-149.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Niimi, Koji; and Kotah, Mitsumi, 4,258,602, Cl. 84-1.010.
Nippon Kogaku K.K.: *See*—
Hasegawa, Hiroshi, 4,258,992, Cl. 354-51.000.
Nippon Soda Company, Ltd.: *See*—
Maeda, Kuniyasu; Kaeriyama, Minoru; Matsui, Nobuo; Ishikawa, Hisao; Yamada, Shozo; and Okunuki, Susumu, 4,259,105, Cl. 71-108.000.
Nakamura, Hiroaki; Kumita, Izumi; Sugita, Yoshiji; and Takagi, Hiedo, 4,259,448, Cl. 435-215.000.
Nippon Soken, Inc.: *See*—
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Tooru; and Ueno, Yoshiki, 4,258,683, Cl. 123-416.000.
Tsuge, Noboru; Kuwakado, Satosi; Takei, Toshihiro; and Shimokawa, Toshiaki, 4,258,934, Cl. 280-806.000.
Yasuda, Eturo; Segawa, Yoshihiro; and Ohta, Minoru, 4,258,563, Cl. 73-23.000.
Nippon Telegraph and Telephone Public Corp.: *See*—
Kawai, Makoto, 4,259,741, Cl. 455-12.000.
Nippondenso Co., Ltd.: *See*—
Ariyoshi, Hiromi; and Mizuno, Tiaki, 4,259,659, Cl. 340-73.000.
Fujisawa, Hideya; Omori, Norio; Yamazoe, Hisamitsu; and Yoshida, Matuju, 4,259,723, Cl. 364-431.000.
Iwata, Yasuhiro; Usami, Kiyoshu; Naganoma, Masanori; Nabeta, Teiichi; and Kojima, Yasuhumi, 4,259,722, Cl. 364-424.000.
Nakamura, Yasuhiko; and Yamakawa, Yoshio, 4,259,096, Cl. 55-316.000.
Nischwitz, Edmond P. Room heating device. 4,258,879, Cl. 237-51.000.
Nishihara, Mieko: *See*—
Ichinose, Noboru; Okuma, Hideo; Yokomizo, Yuji; Takahashi, Takashi; Nishihara, Mieko; and Katsura, Masaki, 4,259,292, Cl. 422-98.000.
Nishikawa, Yoshihiro: *See*—
Hasegawa, Tetsuo; Kato, Shigeo; and Nishikawa, Yoshihiro, 4,259,426, Cl. 430-98.000.
Nishikawa, Yukio; and Oyabu, Zenji. Pneumatic film holding device. 4,258,987, Cl. 353-95.000.
Nishimiya, Toru, to Tomy Kogyo Co., Inc. Maze game having single control. 4,258,918, Cl. 273-110.000.
Nishimoto, Tatsuya: *See*—
Nakane, Ryohei; Isomura, Shohei; Okita, Koichi; Kamijo, Eiji; and Nishimoto, Tatsuya, 4,259,209, Cl. 252-430.000.
Nishimura, Kosuke; Nakagawa, Hirohide; and Haneda, Isamu, to Sharp Kabushiki Kaisha. Television set/calculator interface including exchangeable keyboard panel and program memory cartridge. 4,259,668, Cl. 340-711.000.
Nishioka, Akira: *See*—
Yamasue, Kotaro; Takahashi, Hiroshi; Sakaki, Hirokazu; and Nishioka, Akira, 4,259,434, Cl. 430-302.000.
Nishiyama, Ryota: *See*—
Seino, Shunji; Nishiyama, Ryota; and Nozaki, Masaoki, 4,259,398, Cl. 428-283.000.
Nishizawa, Jun-ichi, to Zaidan Hojin Handotai Kenkyu Shinkokai. Integrated circuit. 4,259,681, Cl. 357-41.000.
Nissan Motor Company, Limited: *See*—
Ishikawa, Masao; Nakamura, Kenji; and Ajimine, Akio, 4,258,643, Cl. 116-286.000.
Itoh, Hiroshi; Tuchiya, Yoshimasa; and Katayama, Yoshinori, 4,258,950, Cl. 296-56.000.
Nisshin Spinning Co., Ltd.: *See*—
Saito, Kazuhisa; Miyatake, Fumio; and Shibata, Kunio, 4,259,397, Cl. 428-288.000.
Nitto Electric Industrial Co., Ltd.: *See*—
Tomomoto, Takanori; Suzuki, Kihachi; Oda, Shin-ichi; and Okuno, Toshimitsu, 4,259,231, Cl. 260-42.520.
Niu, Gregory C. C.: *See*—
Keogh, Philip L.; Kunzler, Jay F.; and Niu, Gregory C. C., 4,259,467, Cl. 526-279.000.
NL Industries, Inc.: *See*—
Brandt, Israel M.; and Scearce, Forrest A., 4,258,791, Cl. 166-302.000.
Noda, Shigeaki: *See*—
Ikeda, Hironosuke; Noda, Shigeaki; and Yoshida, Seiki, 4,259,416, Cl. 429-94.000.
Nodov, Eugene: *See*—
Paranjpe, Suresh C.; Cox, Arthur; Scott, Burton W.; Nodov, Eugene; and Sutera, Richard, 4,259,696, Cl. 358-296.000.
Noguchi, Kazuo; Wakasugi, Makoto; and Kohyama, Fumio, to Citizen Watch Co., Ltd. Quartz crystal vibrator using Ni-Ag or Cr-Ni-Ag electrode layers. 4,259,607, Cl. 310-364.000.
Noguchi, Masaaki; Tanaka, Yukiyasu; and Igarashi, Isao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Two-stroke cycle gasoline engine. 4,258,669, Cl. 123-51.0BA.
Noguchi, Takanobu: *See*—
Yasui, Seimei; Matsuda, Yoshinobu; Sagou, Masakazu; and Noguchi, Takanobu, 4,259,395, Cl. 428-248.000.
Nolte, Hans-Henning; Baudin, Pol; and De Boel, Marcel, to BFG Glassgroup. Formation of solid layers of material. 4,259,273, Cl. 264-42.000.
Nolte, Helmut: *See*—
Eggensperger, Heinz; Rehn, Dieter; Beilfuss, Wolfgang; and Nolte, Helmut, 4,259,383, Cl. 428-72.000.
Nomura, Tadashi; and Inada, Hiroshi, to Nippon Electric Co., Ltd. Servo control system operable on digital basis with limit cycle suppressed. 4,259,626, Cl. 318-599.000.
Norbedo, Robert A.: *See*—
Fahey, Robert J.; Norbedo, Robert A.; and Schlener, J. Edward, 4,259,548, Cl. 179-5.00R.
Norberg, Helmut: *See*—
Hofmann, Karl; and Norberg, Helmut, 4,258,883, Cl. 239-124.000.
Nordson Corporation: *See*—
Cobbs, Walter H., Jr.; and Shong, Robert G., 4,259,402, Cl. 428-310.000.
Northern Telecom Limited: *See*—
Croft, Stanley A.; Dolan, Bruce I.; and Chu, Pak-Jong, 4,259,558, Cl. 200-283.000.
Lukas, Helmut H.; Hvezda, Jaroslav M.; and Dalgleish, Jack F., 4,258,977, Cl. 350-96.210.
Northland Aluminum Products, Inc.: *See*—
Jorgensen, Jorgen A.; and Nygren, Donald W., 4,258,630, Cl. 108-20.000.
Nourigat, Gerard: *See*—
Estrabaud, Stephane; and Nourigat, Gerard, 4,258,622, Cl. 101-93.010.
Novak, Robert; and Ytterfalk, Kjell, to Novak, Robert. X-ray examination apparatus. 4,259,585, Cl. 250-456.000.
Nozaki, Masaoki: *See*—
Seino, Shunji; Nishiyama, Ryota; and Nozaki, Masaoki, 4,259,398, Cl. 428-283.000.
Numazawa, Akio; Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Compact transmission for use in automobiles. 4,258,586, Cl. 74-695.000.
Nuzzi, Francis J.; Leech, Edward J.; Charm, Richard W.; and Polichette, Joseph, to Kollmorgen Technologies Corporation. Composition for sensitizing articles for metallization. 4,259,113, Cl. 106-1.110.
N.V. Verenigde Instrumentenfabrieken Enraf-Nonius: *See*—
Lettinga, Jan, 4,258,707, Cl. 128-75.000.
Nyfeler, Robert: *See*—
Sturm, Elmar; Eckhardt, Wolfgang; Gloor, Bernhard; and Nyfeler, Robert, 4,259,505, Cl. 548-262.000.
Nygards, Nils. Automatic liquid-container filler. 4,258,758, Cl. 141-35.000.
Nygren, Donald W.: *See*—
Jorgensen, Jorgen A.; and Nygren, Donald W., 4,258,630, Cl. 108-20.000.
Oates, Robert M.; and Heinrich, Theodore M., to Westinghouse Electric Corp. Low cost, variable speed, constant torque induction motor drive. 4,259,620, Cl. 318-802.000.
O'Brien, William G., to Du Pont de Nemours, E. I., and Company. Coating apparatus. 4,259,055, Cl. 425-376.00A.
Ochiai, Yoshihito: *See*—
Nakashima, Syozi; Ozawa, Tosiyuki; Ujiie, Takashi; Naganuma, Takeshi; Hayashi, Satoshi; and Ochiai, Yoshihito, 4,259,316, Cl. 424-52.000.

Oda, Hidekuni: *See*—
Kajiura, Hirokazu; Murata, Kazuhiko; Oda, Hidekuni; and Yasutake, Tatsuo, 4,259,468, Cl. 526-283.000.

Oda, Shin-ichi: *See*—
Tomomoto, Takanori; Suzuki, Kihachi; Oda, Shin-ichi; and Okuno, Toshimitsu, 4,259,231, Cl. 260-42.520.

Ogawa, Ryota: *See*—
Tokutomi, Seijiro; Ogawa, Ryota; Ohishi, Michiro; Nakamura, Kazuo; Jyojiki, Masao; and Tachihara, Satoru, 4,258,989, Cl. 354-25.000.

Ogino, Tetsuo; Sengo, Takashi; and Yoshiyama, Toshio, to Mita Industrial Company Limited. Method of controlling heaters for copying apparatus. 4,259,565, Cl. 219-216.000.

Ohara, Yuji: *See*—
Kondoh, Syunichi; Matsufuji, Akihiro; Ohara, Yuji; and Umehara, Akira, 4,259,432, Cl. 430-281.000.

Ohbu, Kazuo: *See*—
Miyajima, Nobuyuki; Johna, Nobuo; Mizushima, Naoki; and Ohbu, Kazuo, 4,259,216, Cl. 252-545.000.

Ohishi, Michiro: *See*—
Tokutomi, Seijiro; Ogawa, Ryota; Ohishi, Michiro; Nakamura, Kazuo; Jyojiki, Masao; and Tachihara, Satoru, 4,258,989, Cl. 354-25.000.

Ohkubo, Toshio; Katoh, Hidehiko; and Kajiwara, Yuji, to Nippon Electric Co., Ltd. Integrated thermal printing head and method of manufacturing the same. 4,259,564, Cl. 219-216.000.

Ohmuro, Yuzo; Kamogawa, Nin-ichi; Uetake, Shigeru; and Yamazaki, Yoshio, to Konishiroku Photo Industry Co., Ltd. Image-forming developer. 4,259,427, Cl. 430-107.000.

Ohno, Shigeru: *See*—
Endo, Ichiro; Kobayashi, Hajime; Komatsu, Toshiyuki; and Ohno, Shigeru, 4,259,424, Cl. 430-48.000.

Ohshima, Iwao: *See*—
Takahashi, Shigeru; Ohshima, Iwao; Honda, Masaki; and Yamashita, Mizuho, 4,259,666, Cl. 340-647.000.

Ohta, Masuo: *See*—
Ueda, Tetsuo; Ohta, Masuo; and Sugano, Seiroku, 4,259,177, Cl. 208-127.000.

Ohta, Minoru: *See*—
Yasuda, Eturo; Segawa, Yoshihiro; and Ohta, Minoru, 4,258,563, Cl. 73-23.000.

Ohtani, Akinobu; Hatanaka, Hideo; and Saito, Motoyuki, to Citizen Watch Co., Ltd. External operation device for electronic timepieces. 4,259,551, Cl. 200-5.00A.

Oikawa, Hiroshi; Katagiri, Ken; Kawaguchi, Harumoto; Kitabatake, Tetsuo; and Nakamoto, Koji, to Shionogi & Co., Ltd. Compositions and methods for controlling coccidiosis. 4,259,321, Cl. 424-120.000.

Oinonen, Hannu, to Oy Wartsila Ab. Method for reducing vibrations in web cutting blades. 4,258,593, Cl. 76-101.00A.

Ojakaar, Leo, to Du Pont de Nemours, E. I., and Company. Polyurethane compositions for tire sidewalls and composite articles. 4,259,227, Cl. 260-37.00N.

Oka, Yoshihiko: *See*—
Gushima, Hiroshi; Watanabe, Shunichi; Saito, Takeshi; Sasaki, Toshio; Eiki, Hideo; Oka, Yoshihiko; and Osono, Takashi, 4,259,326, Cl. 424-246.000.

Okamoto, Nobukazu: *See*—
Matsushima, Yoshihisa; Sakakibara, Tadamori; Kaneko, Katsumi; Wada, Shozo; Ishii, Yoshio; Nagashima, Yukio; and Okamoto, Nobukazu, 4,259,530, Cl. 568-454.000.

Okamoto, Tsuneo; and Wakao, Toshio, to Dainippon Ink & Chemicals, Inc.; Kawamura Institute of Chemical Research; and Wakao Kogei Kabushiki Kaisha. Voltmeter of the liquid crystal display type. 4,259,634, Cl. 324-74.000.

Okamoto, Tsuneo: *See*—
Nagai, Hiroshi; and Okamoto, Tsuneo, 4,259,094, Cl. 55-181.000.

Okayasu, Takeshi: *See*—
Zinnai, Sadazi; and Okayasu, Takeshi, 4,258,901, Cl. 251-173.000.

Okita, Koichi: *See*—
Nakane, Ryohei; Isomura, Shohei; Okita, Koichi; Kamijo, Eiji; and Nishimoto, Tatsuya, 4,259,209, Cl. 252-430.000.

Okuma, Hideo: *See*—
Ichinose, Noboru; Okuma, Hideo; Yokomizo, Yuji; Takahashi, Takashi; Nishihara, Mieko; and Katsura, Masaki, 4,259,292, Cl. 422-98.000.

Okumura, Masatoshi: *See*—
Saito, Isamu; Aoyagi, Koshiki; Okumura, Masatoshi; Banba, Masayoshi; and Shibahara, Naoki, 4,259,225, Cl. 260-31.80B.

Okuno, Toshimitsu: *See*—
Tomomoto, Takanori; Suzuki, Kihachi; Oda, Shin-ichi; and Okuno, Toshimitsu, 4,259,231, Cl. 260-42.520.

Okunuki, Susumu: *See*—
Maeda, Kuniyasu; Kaeriyama, Minoru; Matsui, Nobuo; Ishikawa, Hisao; Yamada, Shozo; and Okunuki, Susumu, 4,259,105, Cl. 71-108.000.

Olbrechts, Guy R., to Boeing Company, The. Gyroscope wheel speed modulator. 4,258,579, Cl. 74-5.370.

Oldham, Ronald C., to International Telephone and Telegraph Corporation. Cable termination. 4,259,543, Cl. 174-70.00S.

Olin Corporation: *See*—
Kaczur, Jerry J.; and Mendiratta, Sudhir K., 4,259,297, Cl. 423-55.000.
Smith, Warren F.; Vitek, John M.; and Shapiro, Eugene, 4,259,124, Cl. 148-2.000.

Oliver, Dorothy. Retractable roof top sign for automotive vehicles. 4,259,660, Cl. 340-120.000.

O'Loughlin, James F.: *See*—
Kaman, Charles H.; Sullivan, Daniel T.; O'Loughlin, James F.; and Mudge, Craig, 4,259,718, Cl. 364-200.000.

Olschewski, Armin: *See*—
Kunkel, Heinrich; Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Ernst, Horst M., 4,258,806, Cl. 175-370.000.

Olson, Donel R., to Olson Engineering, Inc. Time delay valve. 4,258,688, Cl. 123-587.000.

Olson Engineering, Inc.: *See*—
Olson, Donel R., 4,258,688, Cl. 123-587.000.

Olympus Optical Co., Ltd.: *See*—
Fukuoka, Norio, 4,259,745, Cl. 455-159.000.
Goto, Atsuo, 4,258,981, Cl. 350-475.000.

Omori, Norio: *See*—
Fujisawa, Hideya; Omori, Norio; Yamazoe, Hisamitsu; and Yoshida, Matuju, 4,259,723, Cl. 364-431.000.

Omori, Ryozo, to Sharp Kabushiki Kaisha. Clocking system for MOS transistor logic circuit. 4,259,595, Cl. 307-452.000.

Onda, Eiichi: *See*—
Watanabe, Masanori; Nakagawa, Tadashi; Nemoto, Ichiro; Onda, Eiichi; and Koyama, Mitsuo, 4,259,001, Cl. 354-266.000.

O'Neill, Edward G., to Medtronic, Inc. Pacing lead with stylet and tapered terminal pin. 4,258,725, Cl. 128-419.00P.

Ono, Yoshiro: *See*—
Takahashi, Akira; and Ono, Yoshiro, 4,258,690, Cl. 125-30.0WD.

Ontario Research Foundation: *See*—
Glass, Roger W.; and Kuntze, Richard A., 4,259,146, Cl. 162-3.000.

Opitz, Heinrich; and Montag, Bernhard, to Siemens Aktiengesellschaft. Method for making stationary heat transfer coefficient fields visible by photochemical means. 4,259,431, Cl. 430-199.000.

Orfe, John C.: *See*—
Venetucci, Jim M.; and Orfe, John C., 4,259,360, Cl. 426-231.000.

Orihara, Shobu; Iwasa, Seiichi; and Kinoshita, Ryoichi, to Fujitsu Limited. Magnetic bubble memory device. 4,259,727, Cl. 365-16.000.

O'Rourke, Richard G.: *See*—
Knibb, Terence F.; and O'Rourke, Richard G., 4,259,679, Cl. 357-17.000.

Orshansky, Betty B., executrix: *See*—
Orshansky, Elias, Jr., deceased; and Weseloh, William E., 4,258,585, Cl. 74-687.000.

Orshansky, Elias, Jr., deceased (by Orshansky, Betty B., executrix); and Weseloh, William E., to Orshansky Transmission Corporation. Four-range hydromechanical transmission with hydrostatic steering module. 4,258,585, Cl. 74-687.000.

Orshansky Transmission Corporation: *See*—
Orshansky, Elias, Jr., deceased; and Weseloh, William E., 4,258,585, Cl. 74-687.000.

Orszullok, Willy, to Friedrich Grohe Armaturenfabrik GmbH & Co. Bath water level control system. 4,258,444, Cl. 4-538.000.

Orthoband Company, Inc.: *See*—
DeWoskin, Irvin S., 4,259,065, Cl. 433-5.000.

Osaka Oxygen Ind Ltd.: *See*—
Hagiwara, Zenzi; Uenoyama, Iwao; and Ishino, Hiroo, 4,259,299, Cl. 423-210.000.

Osono, Takashi: *See*—
Gushima, Hiroshi; Watanabe, Shunichi; Saito, Takeshi; Sasaki, Toshio; Eiki, Hideo; Oka, Yoshihiko; and Osono, Takashi, 4,259,326, Cl. 424-246.000.

OT-tehdas Oy: *See*—
Ahtiainen, Ari J., 4,259,632, Cl. 324-61.00R.

Otis Engineering Corporation: *See*—
Restarick, Henry L., 4,258,792, Cl. 166-315.000.
Sizer, Phillip S.; Pearce, Joseph L.; and Dowden, Sanford R., 4,258,794, Cl. 166-356.000.

Otto Niederer Sons, Inc.: *See*—
Niederer, Lee H.; and Niederer, Thomas O., 4,258,839, Cl. 198-478.000.

Outboard Marine Corporation: *See*—
Burmeister, Dennis N., 4,258,642, Cl. 440-53.000.
Kidd, Earl H.; Martin, Herman H., Jr.; and Reid, Raymond R., 4,258,536, Cl. 56-17.500.
Morse, Richard R., 4,258,538, Cl. 56-202.000.
Pearce, Richard E.; and Stolley, Ronald M., 4,258,539, Cl. 56-320.200.

Outokumpu Oy: *See*—
Aaltonen, Olavi A.; and Makinen, Juho K., 4,259,106, Cl. 75-7.000.

Owen, William J. Conduit trunking. 4,258,515, Cl. 52-105.000.

Oxenham, William: *See*—
Wilson, Ian B.; and Oxenham, William, 4,258,454, Cl. 19-105.000.

OY. Fiskars AB: *See*—
Linden, Erkki O., 4,258,592, Cl. 76-82.200.

Oy Wartsila Ab: *See*—
Oinonen, Hannu, 4,258,593, Cl. 76-101.00A.

Oyabu, Zenji: *See*—
Nishikawa, Yukio; and Oyabu, Zenji, 4,258,987, Cl. 353-95.000.

Ozaki, Masayoshi: *See*—
Tsujimoto, Susumu; Yamazaki, Hayao; Ozaki, Masayoshi; Kobayashi, Takehiro; Fujino, Toru; Yasuda, Mitsuo; Minami, Katsuji; and Itogawa, Zirou, 4,258,731, Cl. 132-9.000.

Ozawa, Tosiyuki: *See*—
Nakashima, Syozi; Ozawa, Tosiyuki; Ujiie, Takashi; Naganuma, Takeshi; Hayashi, Satoshi; and Ochiai, Yoshihito, 4,259,316, Cl. 424-52.000.

Packard Instrument Company, Inc.: *See*—
Kaartinen, Niilo H.; and Juhala, Pentti J., 4,258,740, Cl. 137-74.000.

Packard, Thomas N.: *See*—
Burns, Richard C.; and Packard, Thomas N., 4,259,742, Cl. 455-52.000.
PACO Winders, Inc.: *See*—
Fegley, Richard F.; and Kiss, Steven R., 4,258,613, Cl. 493-22.000.
Page, John A.: *See*—
Britton, Arthur; Smith, John C.; Davis, Roger I.; and Page, John A., 4,259,379, Cl. 427-356.000.
Paioni, Romeo; Schilling, Walter; and Bernasconi, Raymond, to Ciba-Geigy Corporation. Benzofuranyl-tetrahydropyridines and -piperidines, their acid addition salts and antidepressant preparations thereof. 4,259,338, Cl. 424-267.000.
Palosi, Endre: *See*—
Gonczi, Csaba; Korbonits, Dezso; Kiss, Pal; Palosi, Endre; Heja, Gergely; Szvoboda nee Kanzel, Ida; Cser nee Kun, Judit; Szomor nee Wundele, Maria; Kormoczi, Gyorgy; and Kelemen, Andras, 4,259,344, Cl. 424-273.00B.
Pamer, Walter R.; and Capuano, Terry D., to Lamson & Sessions Co., The. Fastener assembly. 4,258,768, Cl. 152-176.000.
Paradis, Stephen G.: *See*—
Bakshi, Kiran R.; Marquis, David M.; and Paradis, Stephen G., 4,259,246, Cl. 260-346.750.
Paranjpe, Suresh C.; Cox, Arthur; Scott, Burton W.; Nodov, Eugene; and Sutera, Richard, to Mead Corporation, The. Apparatus and method for jet drop copying with an array of jets and photodetectors. 4,259,696, Cl. 358-296.000.
Parent, Bernard; and Guedj, Herbert. Self-contained portable hysteroscope. 4,258,721, Cl. 128-747.000.
Parish, Edwin J.: *See*—
Delk, Charles W.; Brandenburg, Lee H.; and Parish, Edwin J., 4,258,512, Cl. 52-79.700.
Pascal, Jean C.; and Pinhas, Henri, to Laroche Navarron S.A. Piperazines and therapeutic utility. 4,259,334, Cl. 424-250.000.
Passarotti, Carlo: *See*—
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,259,244, Cl. 260-346.220.
Passer, Barry E.; and Sculley, George A., to NCR Corporation. Code sensing system. 4,259,569, Cl. 235-463.000.
Passoni, Raffaele; and Camboni, Vittorio, to Laboratorio Chimico Farmaceutico CAUSYTH S.p.A. Novel taurine derivatives. 4,259,332, Cl. 424-230.000.
Patel, Amrut R.; and Hansen, Donald M., to Siemens-Allis, Inc. Filtering means for arc suppressing gas system. 4,259,097, Cl. 55-316.000.
Patton, Franklin D.; and McFarlane, James D., to Westbay Instruments Ltd. CPI Casing. 4,258,788, Cl. 166-185.000.
Pauli, Klaus H.: *See*—
Glaser, Fritz; Gortz, Christoph; Buhler, Kurt K.; Klimmer, Josef W.; Laberheim, Rene; Pauli, Klaus H.; and Velten, Werner, 4,258,726, Cl. 130-27.00L.
Paulis, George J.: *See*—
Redman, David T.; and Paulis, George J., 4,258,738, Cl. 137-68.000.
Pauze, Denis R., to General Electric Company. Water-soluble polyamideimides. 4,259,221, Cl. 260-29.20N.
Pearce, Joseph L.: *See*—
Sizer, Phillip S.; Pearce, Joseph L.; and Dowden, Sanford R., 4,258,794, Cl. 166-356.000.
Pearce, Richard E.; and Stolley, Ronald M., to Outboard Marine Corporation. Grass discharge chute deflector for rotary lawn mower. 4,258,539, Cl. 56-320.200.
Pearson, Arthur C.; and Sieg, Robert A., to ACF Industries, Inc. Railway brake system utilizing slack adjuster in compression. 4,258,830, Cl. 188-52.000.
Peehs, Martin; and Hunner, Manfred, to Kraftwerk Union Aktiengesellschaft. Fuel assembly for gas-cooled nuclear reactors. 4,259,155, Cl. 176-78.000.
Peetz, Wolfgang; and Klaissle, Siegfried, to Hawera Probst GmbH & Co. Rock drill. 4,258,808, Cl. 175-394.000.
Pegels, Abraham A.: *See*—
Van Zijll Langhout, Wouter C.; Pegels, Abraham A.; and Wijffels, Joannes B., 4,259,294, Cl. 422-190.000.
Peil, William: *See*—
Harris, James E.; McFadyen, Robert J.; Peil, William; and Schmitz, Nicholas A., 4,259,716, Cl. 363-97.000.
Pelrine, Bruce P., to Mobile Oil Corporation. Synthesis of ZSM-39. 4,259,306, Cl. 423-325.000.
Penman, Frederick S.: *See*—
Bloomfield, Edward J.; and Penman, Frederick S., 4,259,637, Cl. 324-166.000.
Pennell, William E.; and Sutton, Harry G., Jr., to United States of America, Energy. Weld failure detection. 4,259,152, Cl. 176-19.0LD.
Penney, Gaylord W. System for charging particles entrained in a gas stream. 4,259,707, Cl. 361-212.000.
Pera, Vittorio, to Autovox S.p.A. Device for inserting and ejecting a cassette in a cassette-type tape recorder/playback apparatus. 4,259,701, Cl. 360-96.500.
Perry, Clifford R.; and Dietz, Lloyd H., to Boeing Company, The. Heat exchange apparatus and method of utilizing the same. 4,258,784, Cl. 165-166.000.
Perry, Gordon R.: *See*—
Ernst, Frank J.; Chernack, Milton P.; and Perry, Gordon R., 4,258,491, Cl. 40-525.000.
Perry, Richard R.; Maran, Anthony G.; and Schols, Anton G. Rendering methods and systems. 4,259,252, Cl. 260-412.600.
Persson, Erik; and Sundin, Johnny, to ASEA Aktiebolag. Flux control in tape windings. 4,259,654, Cl. 336-84.00R.
Peters, David C.: *See*—
Akers, John B.; and Peters, David C., 4,259,251, Cl. 260-412.500.
Petersen, Richard E.: *See*—
Veiga, Manuel J.; and Petersen, Richard E., 4,259,384, Cl. 428-97.000.
Petocz, Lujza: *See*—
Levai, Laszlo; Fazekas, Gabor; Petocz, Lujza; and Grasser, Katalin, 4,259,257, Cl. 260-501.180.
Petro-Drive, Inc.: *See*—
Hipp, James, 4,258,800, Cl. 175-61.000.
Petrolite Corporation: *See*—
Buriks, Rudolf S.; Fauke, Allen R.; and Munch, John H., 4,259,464, Cl. 525-480.000.
Naiman, Michael I.; Knepper, J. Irvine; and Thompson, Neil E. S., 4,259,087, Cl. 44-62.000.
Quinlan, Patrick M., 4,259,483, Cl. 544-57.000.
Pezat, Michel; Hbika, Abdelmalek; Darriet, Bernard; and Hagenmuller, Paul, to Agence Nationale de Valorisation de la Recherche (ANVAR). Process for storing of hydrogen and the use thereof, particularly in engines. 4,259,110, Cl. 75-168.00J.
Pfeiffer, John E. Self-contained portable electrically sensed bathroom scale. 4,258,812, Cl. 177-210.00R.
Pfizer Inc.: *See*—
Armstrong, William W., 4,259,331, Cl. 424-227.000.
Cross, Peter E.; and Dickinson, Roger P., 4,259,345, Cl. 424-273.00R.
Philagro: *See*—
Giraudon, Raymond, 4,259,506, Cl. 549-23.000.
Sauli, Michel, 4,259,497, Cl. 548-144.000.
Philip Morris Incorporated: *See*—
de la Burde, Roger Z.; Aument, Patrick E.; and Utsch, Francis V., 4,258,729, Cl. 131-140.00P.
Phillips, Edwin R.; and Stankiewicz, Raymond J., to Sperry Corporation. Air jet means for removing liquid from a conductive surface. 4,259,006, Cl. 355-10.000.
Phillips Petroleum Company: *See*—
Drake, Charles A., 4,259,262, Cl. 564-491.000.
Eddy, William R., 4,259,372, Cl. 427-236.000.
Haws, John R., 4,259,218, Cl. 260-5.000.
Hedges, James H.; and Glinsmann, Gilbert R., 4,258,789, Cl. 166-252.000.
Hughes, James K.; and Erickson, Wayne K., 4,258,457, Cl. 28-221.000.
Kallenberger, Robert H.; and Anderson, John E., 4,259,308, Cl. 423-449.000.
Louthan, Jean H.; and Wynne, Ralph A., 4,258,742, Cl. 137-318.000.
Smith, Ernest L., 4,258,529, Cl. 53-478.000.
Piasecki, Raymond F.: *See*—
Kuo, Ted L. C.; Piasecki, Raymond F.; and Grundfest, Michael A., 4,258,974, Cl. 339-97.00R.
Pichler, Ludwig: *See*—
Benedikter, Lothar; Kobinger, Walter; Pichler, Ludwig; Ihrig, Hanns; and Griss, Gerhart, 4,259,342, Cl. 424-270.000.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; Pichler, Ludwig; Hoefke, Wolfgang; and Gaida, Wolfram, 4,259,346, Cl. 424-273.00R.
Pickering, Terence J.: *See*—
Morris, Roy; and Pickering, Terence J., 4,259,590, Cl. 250-560.000.
Morris, Roy; and Pickering, Terence J., 4,259,591, Cl. 250-560.000.
Pickett, Charles G. Method and apparatus for fluid sound amplification and detection of low frequency signals. 4,258,754, Cl. 137-819.000.
Pierburg GmbH & Co. KG: *See*—
Schwander, Dieter; and Findeisen, Bernd, 4,259,265, Cl. 261-41.00D.
Pietschmann, Helmut, to Sybron Corporation. Retraction mechanism for dental units and the like. 4,259,066, Cl. 433-78.000.
Pinhas, Henri: *See*—
Pascal, Jean C.; and Pinhas, Henri, 4,259,334, Cl. 424-250.000.
Pioneer Electronic Corporation: *See*—
Kuribayashi, Hiroshi; and Ikeda, Atsuo, 4,259,602, Cl. 310-12.000.
Piotrowski, Alfred B.; and Davis, Robert H., to Mobil Oil Corporation. Metal working lubricant containing an alkanolamine and a cycloaliphatic acid. 4,259,206, Cl. 252-34.700.
Pitney Bowes Inc.: *See*—
Lowe, Lynnwood, 4,258,580, Cl. 74-109.000.
Pixton, Betty G.: *See*—
Fruitstone, Mitchell J.; Tilly, Michele M.; and Pixton, Betty G., 4,259,207, Cl. 252-408.000.
Platt, Stephen A., to S. A. Platt, Inc. Coiling machine. 4,258,561, Cl. 72-142.000.
Platz, Rolf; Fuchs, Werner; Rieber, Norbert; Jung, Johann; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Tricyclic nitrogenous compounds having string plant growth regulating properties. 4,259,235, Cl. 260-152.000.
Plenikowski, Johannes: *See*—
Dittmann, Walter; Frese, Albert; Hahmann, Otto; Plenikowski, Johannes; and Klawitter, Helmut, 4,259,410, Cl. 428-461.000.
Plessey Handel und Investments A.G.: *See*—
Knibb, Terence F.; and O'Rourke, Richard G., 4,259,679, Cl. 357-17.000.
Pohl, Dieter W.; and Scheel, Hansjoerg, to International Business Machines Corporation. Apparatus for manufacturing multi-layered semiconductor elements by means of liquid-phase epitaxy. 4,258,647, Cl. 118-52.000.

Poirier, Paul J., to United States of America, Transportation. Optical track gage measuring device. 4,259,018, Cl. 356-375.000.
Polaroid Corporation: *See*—
Berke, Carl M.; and Baughman, Barbara A., 4,259,114, Cl. 106-1.280.
Bloom, Stanley M.; Borror, Alan L.; and Foley, James W., 4,259,498, Cl. 548-207.000.
Buzzell, Harold O., 4,258,653, Cl. 118-419.000.
Falxa, Martin L.; and Meara, Kenneth J., 4,259,438, Cl. 430-567.000.
Foley, James W., 4,259,493, Cl. 546-96.000.
Hanselman, Raymond B.; Magenheimer, John J.; and Scott, Kenneth G., 4,259,115, Cl. 106-1.280.
Scott, Kenneth G., 4,259,116, Cl. 106-1.280.
Polazzi, Joseph O.: *See*—
Kotick, Michael P.; and Polazzi, Joseph O., 4,259,329, Cl. 424-260.000.
Polgari, Istvan: *See*—
Szilagyi, Geza; Kasztreiner, Endre; Kosary, Judit; Matyus, Peter; Huszti, Zsuzsa; Cseh, Gyorgy; Kenessey, Agnes; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, 4,259,328, Cl. 424-248.530.
Polichette, Joseph: *See*—
Nuzzi, Francis J.; Leech, Edward J.; Charm, Richard W.; and Polichette, Joseph, 4,259,113, Cl. 106-1.110.
Politycki, Alfred; Hieber, Konrad; and Stolz, Manfred, to Siemens Aktiengesellschaft. CVD Coating device for small parts. 4,258,658, Cl. 118-719.000.
Pollak, Gerd: *See*—
Neuenfeldt, Walter; Sulic, Milan; and Pollak, Gerd, 4,259,156, Cl. 176-87.000.
Poly Cast, Inc.: *See*—
Kadau, Dennis K.; and Barkovich, Stephen J., 4,259,111, Cl. 75-171.000.
Polymer Sciences Corporation: *See*—
Stille, John K., 4,259,519, Cl. 560-193.000.
Polysar Limited: *See*—
Hulme, Joseph M.; and Thibodeau, William E., 4,258,564, Cl. 73-61.10C.
Schwarz, Herbert F., 4,259,460, Cl. 525-208.000.
Pomeroy, Frederick A.: *See*—
Davidson, Bruce W.; Pomeroy, Frederick A.; and Sandhu, M. Akram, 4,259,422, Cl. 430-17.000.
Ponpipom, Mitree M.; Shen, Tsung-Ying; and Bugianesi, Robert L., to Merck & Co., Inc. Immunologic adjuvant thio glycoside compounds and compositions. 4,259,324, Cl. 424-180.000.
Ponticello, Gerald S.: *See*—
Baldwin, John J.; and Ponticello, Gerald S., 4,259,341, Cl. 424-270.000.
Popli, Shankar D.: *See*—
Lippmann, Irwin; Popli, Shankar D.; Miller, Larry G.; and Bell, Louis G., 4,259,315, Cl. 424-37.000.
Poston, John B., to Eastman Whipstock, Inc. Dump valve for use with downhole motor. 4,258,801, Cl. 175-65.000.
Postupack, Dennis S.; and Sopko, John F., to PPG Industries, Inc. Method for improving the alkali durability of metal oxide films formed by pyrolysis. 4,259,371, Cl. 427-226.000.
Potts, Alan W., to Upjohn Company, The. Activator closure for two-compartment vial. 4,258,845, Cl. 206-221.000.
Pouget, Rene J., to Aciers et Outillage Peugeot. Latch for a vehicle door. 4,258,945, Cl. 292-68.000.
Pouliot, Harvey N.: *See*—
Kemper, Yves J.; and Pouliot, Harvey N., 4,258,581, Cl. 74-192.000.
Power Controls Corporation: *See*—
Wall, Bill R., 4,259,619, Cl. 315-361.000.
Pozniko, John M.: *See*—
Horning, Frederick G.; Pozniko, John M.; and Welch, Karl H., 4,258,796, Cl. 175-52.000.
PPG Industries, Inc.: *See*—
Fahey, Dennis M., 4,259,190, Cl. 252-8.600.
Postupack, Dennis S.; and Sopko, John F., 4,259,371, Cl. 427-226.000.
Pracht, Hans J.: *See*—
Demessemaekers, Emiel M.; and Pracht, Hans J., 4,259,373, Cl. 427-242.000.
Pray, Winston C., to Flexible Steel Lacing Company. Apparatus for applying belt fasteners to a belt. 4,258,461, Cl. 29-243.500.
Prezewowsky, Klaus; Steinbeck, Hermann; and Wiechert, Rudolf, to Schering Aktiengesellschaft (A.G.). 1,3-Dibenzoic acid esters of 17α-ethynyl-7α-methyl-1,3,5(10)-estratriene-1,3,17β-triol. 4,259,325, Cl. 424-238.000.
Price Company Limited, The: *See*—
Beath, Laurence R.; and Mihelich, Walter G., 4,259,148, Cl. 162-24.000.
Price, George M.: *See*—
Moore, L. Frank; and Price, George M., 4,259,567, Cl. 219-327.000.
Princeton Applied Research Corporation: *See*—
Talmi, Yair, 4,259,014, Cl. 356-328.000.
Printronix, Inc.: *See*—
Barrus, Gordon B.; and Matula, Jerry, 4,258,623, Cl. 101-93.040.
Pris, Harold C.; and Froelich, Leo, to Froelich, Leo. Animal litter composition. 4,258,660, Cl. 119-1.000.
Prober, James M.; and Dam, Rudy J., to Du Pont de Nemours, E. I., and Company. Method of determining small concentrations of chemical compounds by plasma chromatography. 4,259,573, Cl. 250-287.000.
Procter, Donald. Process for preparing a dehydrated protein product from animal matter. 4,259,361, Cl. 426-285.000.
Procter & Gamble Company, The: *See*—
Cockrell, John R., Jr.; and Hanley, Dean C., 4,259,201, Cl. 252-103.000.
Degenhardt, Charles R., 4,259,249, Cl. 260-404.000.
Demessemaekers, Emiel M.; and Pracht, Hans J., 4,259,373, Cl. 427-242.000.
Louis, Paul R.; Sorensen, Eugene R.; and Ballard, Thomas R., 4,259,286, Cl. 264-555.000.
Murphy, Alan P., 4,259,217, Cl. 252-547.000.
Wee, Maria Luz S.; Gilbert, Lawrence A.; and Mathew, Jacob, 4,259,199, Cl. 252-99.000.
Prosl, Frank R.: *See*—
Tucker, Elton M.; and Prosl, Frank R., 4,258,711, Cl. 128-207.190.
Proud, Joseph M.; Auborn, James M.; and Bessett, R. A., to GTE Laboratories Incorporated. High voltage control devices. 4,259,593, Cl. 307-117.000.
Prough, James R., to Kamyr Inc. Plural stage mixing and thickening oxygen bleaching process. 4,259,150, Cl. 162-40.000.
Pryamilov, Jury S.; Nikolaichev, Nikolai A.; Negin, Gennady V.; Duntsev, Vsevolod Y.; Krylov, Robert M.; and Shiryaev, Vladimir I. Device for removal of fuel assemblies and cans of control and safety system from core of nuclear reactor. 4,259,153, Cl. 176-30.000.
Pugliese, Francesco: *See*—
Mariani, Rodolfo; and Pugliese, Francesco, 4,258,732, Cl. 132-41.00R.
Pullman Incorporated: *See*—
Miller, Roy W., 4,259,036, Cl. 414-388.000.
Purwin, Paul E.; and Shaw, Robert F., to Exxon Research and Engineering Co. Selenium photovoltaic device. 4,259,122, Cl. 136-258.000.
Quality Bedding and Litter, Inc.: *See*—
Rowell, George W., 4,258,659, Cl. 119-1.000.
Quednau, Peter: *See*—
Dalibor, Horst; Kiessling, Hans-Joachim; and Quednau, Peter, 4,259,224, Cl. 260-31.2XA.
Quinlan, Patrick M., to Petrolite Corporation. Quaternary ammonium salts of α-1,4-thiazine alkanephosphonic acids. 4,259,483, Cl. 544-57.000.
Qume Corporation: *See*—
Jamieson, John W., 4,259,025, Cl. 400-18.000.
Rafikov, Sagid R.: *See*—
Nikitin, Jury E.; Murinov, Jury I.; Leplyanin, Gennady V.; Rafikov, Sagid R.; Bikchurina, Lilia K.; Tolstikov, Genrikh A.; Kazakov, Valery P.; Battalov, Edvard M.; Kolosnitsyn, Vladimir S.; Golodkova, Lyalya N.; Izmailov, Genrikh I.; and Markin, Gennady K., 4,259,229, Cl. 260-42.210.
Ralston Purina Company: *See*—
Eshnaur, Helen E.; and Shugart, Jack I., 4,258,667, Cl. 119-159.000.
Ramesohl, Hubert; Herchenbach, Horst; and Schroder, Karlheinz, to Klockner-Humboldt-Deutz AG. Apparatus for cooling of cement clinker or the like. 4,259,062, Cl. 432-78.000.
Ramsey, Marvin L. High torque sectional socket ratchet wrench. 4,258,595, Cl. 81-61.000.
Ransome Hoffmann Pollard Limited: *See*—
Bloomfield, Edward J.; and Penman, Frederick S., 4,259,637, Cl. 324-166.000.
Ranucci, Joseph A., to Hoffmann-La Roche Inc. Potassium chloride emulsion. 4,259,323, Cl. 424-153.000.
Rao, Ashok D.: *See*—
Ban, Thomas E.; and Rao, Ashok D., 4,259,085, Cl. 44-26.000.
Rasberger, Michael, to Ciba-Geigy Corporation. Dioxaphosphepines. 4,259,492, Cl. 546-21.000.
Rasch, Arthur A.; and Searle, Roger, to Eastman Kodak Company. Silver/silver halide electrodes comprising chromium or nickel. 4,259,164, Cl. 204-195.00F.
Rasch, Kenneth R.: *See*—
Leising, Walter F.; and Rasch, Kenneth R., 4,258,648, Cl. 118-60.000.
Rasmussen, John N.: *See*—
Albertson, Clarence E.; Nichols, George M.; and Rasmussen, John N., 4,258,783, Cl. 165-133.000.
Rawlings, Derek S. Hole forming. 4,259,276, Cl. 264-68.000.
Raytheon Company: *See*—
Liskov, Nathan A.; and Hendry, David L., 4,259,738, Cl. 370-102.000.
RCA Corporation: *See*—
Christiano, Victor; and Carroll, Charles B., 4,259,612, Cl. 313-422.000.
D'Amato, Ralph J., 4,259,692, Cl. 358-237.000.
Goldman, Abraham, 4,259,421, Cl. 430-5.000.
Levin, Herbert L., 4,259,671, Cl. 343-704.000.
Month, Alfred; and Benner, Timothy E., 4,259,609, Cl. 313-372.000.
Takahashi, Tatsuo; and Yamada, Osamu, 4,259,587, Cl. 250-486.000.
van Raalte, John A., 4,259,611, Cl. 33-422.000.
Vilkomerson, David H. R.; and Mezrich, Reuben S., 4,258,576, Cl. 73-633.000.
Whitehurst, Marshal L., 4,259,166, Cl. 204-279.000.
Williams, Richard, 4,259,414, Cl. 429-17.000.
Wilson, Wallace; and Egenski, Frank J., 4,258,508, Cl. 51-283.00R.
Witte, Walter R., 4,258,467, Cl. 29-605.000.
Reber, Fred L. Mask-type respirator. 4,258,710, Cl. 128-204.180.
Redman, David T.; and Paulis, George J., to United States of America, Army. Crashworthy fuel system. 4,258,738, Cl. 137-68.000.

Reece, James J.: *See*—
Jackson, Keith L.; Reece, James J.; and Spencer, Kenneth E., 4,258,629, Cl. 105-167.000.

Reed International Limited: *See*—
Wagstaffe, Eric C., 4,259,386, Cl. 428-159.000.

Reed, Robert W., to D. L. Auld Company, The. Medallion-like articles, lamp lenses and method for their manufacture. 4,259,388, Cl. 428-174.000.

Rees, Herbert; and Schad, Robert D., to Husky Injection Molding Systems Limited. Bottle-molding system. 4,259,056, Cl. 425-533.000.

Regal China Corporation: *See*—
Greenberg, Jerome S., 4,259,279, Cl. 264-86.000.

Regal Ware, Inc.: *See*—
Fritz, DeWayne A., 4,258,657, Cl. 118-710.000.

Regnier, Alexis G.: *See*—
Wray, Daniel J.; and Regnier, Alexis G., 4,258,509, Cl. 51-334.000.

Rehbein, Erwin G., to Mill-Craft Housing Corporation. Multiple panel building closure. 4,258,520, Cl. 52-522.000.

Rehn, Dieter: *See*—
Eggensperger, Heinz; Rehn, Dieter; Beilfuss, Wolfgang; and Nolte, Helmut, 4,259,383, Cl. 428-72.000.

Reid, Raymond R.: *See*—
Kidd, Earl H.; Martin, Herman H., Jr.; and Reid, Raymond R., 4,258,536, Cl. 56-17.500.

Reiff, Ulrich: *See*—
Baumgartl, Wilhelm; Funke, Hermann; Reiff, Ulrich; and Scheier, Franz, 4,259,285, Cl. 264-284.000.

Reighart, Ray R., II. Tornado novelty device. 4,258,912, Cl. 272-8.00D.

Reinhard, Theodor: *See*—
Scharm, Dieter; Emmer, Ludwig; Reinhard, Theodor; and Kneib, Rudi, 4,258,555, Cl. 62-244.000.

Reiss, Robert J.: *See*—
Giulie, Joe D.; and Reiss, Robert J., 4,259,143, Cl. 156-499.000.

Reitmaier, Ludwig. Roof and wall covering. 4,258,703, Cl. 126-445.000.

Reitz, Gunther; Boehmke, Gunther; and Jakobs, Karlhans, to Bayer Aktiengesellschaft. Method of dispersing, emulsifying materials with phosphoric acid esters. 4,258,448, Cl. 8-582.000.

Rembaum, Alan; Gupta, Amitava; and Volksen, Willi, to California Institute of Technology. Cross-linked polyvinyl pyridine coated glass particle catalyst support and aqueous composition or polyvinyl pyridine adducted microspheres. 4,259,223, Cl. 260-29.60H.

Renirie, Alexis C. M., to Vitatron Medical B.V. Circuit and method for detecting battery source end of life. 4,259,639, Cl. 324-430.000.

REPA Feinstanzwerk GmbH: *See*—
Fohl, Artur; Honl, Wolf-Dieter; and Seifert, Helmut, 4,258,887, Cl. 242-107.40A.

Restarick, Henry L., to Otis Engineering Corporation. Hydraulic tubing tensioner. 4,258,792, Cl. 166-315.000.

Reusser, Fritz: *See*—
Argoudelis, Alexander D.; Brodasky, Thomas F.; and Reusser, Fritz, 4,259,450, Cl. 435-253.000.

Reuter, Gerhard; Schnabel, Wolfram; and Lausch, Herbert, to Metallgesellschaft Aktiengesellschaft. Process of calcining limestone in a rotary kiln. 4,259,081, Cl. 23-293.00R.

Rexnord, Inc.: *See*—
Harris, Bernard, 4,258,960, Cl. 308-238.000.

Reynolds, Charles E.; and Swengel, Robert C., Jr., to AMP Incorporated. Connecting means having kinematic conductor-contacting portions. 4,258,973, Cl. 339-95.00R.

Rheinische Braunkohlenwerke AG: *See*—
Weber, Heinrich; Lorenz, Kurt; Dungs, Horst; Kurtz, Roman; and Kersting, Hans-Joachim, 4,259,158, Cl. 202-121.000.

Rheinische Braunkohlenwerke Aktiengesellschaft: *See*—
Lorenz, Kurt; Dungs, Horst; Koenigs, Hans B.; and Kurtz, Roman, 4,259,157, Cl. 201-39.000.

Rhodes, George W. Process for drying coal and other conductive materials using microwaves. 4,259,560, Cl. 219-10.55M.

Rhone-Poulenc-Textile: *See*—
Bolliand, Robert, 4,259,400, Cl. 428-288.000.

Ribbon Technology Corporation: *See*—
Hackman, Lloyd E., 4,259,125, Cl. 148-3.000.

Riccar Company, Ltd.: *See*—
Doyama, Umeo, 4,258,638, Cl. 112-158.00E.

Richardson, Donald M., deceased (by Richardson, Elizabeth B., executrix); and Bamberger, Carlos E., to United States of America, Energy. Thermochemical process for recovering Cu from CuO or CuO_2. 4,259,108, Cl. 75-117.000.

Richardson, Elizabeth B., executrix: *See*—
Richardson, Donald M., deceased; and Bamberger, Carlos E., 4,259,108, Cl. 75-117.000.

Richardson, Neil G., to Domtar Inc. Wood treatment process. 4,259,378, Cl. 427-352.000.

Richey, Vernon T.; and Moses, Edward L., Jr. Releasable drill string stabilizer. 4,258,804, Cl. 175-325.000.

Richter Gedeon Vegyeszeti Gyar Rt: *See*—
Szilagyi, Geza; Kasztreiner, Endre; Kosary, Judit; Matyus, Peter; Huszti, Zsuzsa; Cseh, Gyorgy; Kenessey, Agnes; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, 4,259,328, Cl. 424-248.530.

Ridge, David N.: *See*—
Hanifin, John W., Jr.; and Ridge, David N., 4,259,256, Cl. 260-465.00E.
Lang, Stanley A., Jr.; Lin, Yang-I; and Ridge, David N., 4,259,504, Cl. 548-262.000.

Rieber, Norbert: *See*—
Platz, Rolf; Fuchs, Werner; Rieber, Norbert; Jung, Johann; and Wuerzer, Bruno, 4,259,235, Cl. 260-152.000.

Rijckaert, Albert M. A., to U.S. Philips Corporation. Circuit for controlling a piezo-electric positioning element. 4,259,605, Cl. 310-317.000.

Rikagaku Kenkyusho: *See*—
Ando, Tadahiko; Shibata, Takehiko; Hayase, Eiji; and Ikawa, Shukuko, 4,259,446, Cl. 435-199.000.
Nakane, Ryohei; Isomura, Shohei; Okita, Koichi; Kamijo, Eiji; and Nishimoto, Tatsuya, 4,259,209, Cl. 252-430.000.

Ritter, Ernst: *See*—
Volz, Werner; Russeler, Friedrich; Ritter, Ernst; and Schwartz, Reinhard, 4,258,675, Cl. 123-374.000.

Ritzi, Emil W., to Biphase Energy Systems. Multi-stage, wet steam turbine. 4,258,551, Cl. 60-654.000.

RMR Systems, Inc.: *See*—
Manning, John, 4,259,665, Cl. 340-575.000.

Roach, Jere H.: *See*—
Cammann, Fred W.; and Roach, Jere H., 4,259,562, Cl. 219-68.000.

Roane, Patricia A. Tetrahedron blocks capable of assembly into cubes and pyramids. 4,258,479, Cl. 434-211.000.

Robert Bosch GmbH: *See*—
Eckert, Konrad; Espenschied, Helmut; Rothfuss, Georg; and Witte, Alexander, 4,258,591, Cl. 74-866.000.
Eckert, Konrad, 4,258,680, Cl. 123-254.000.
Gause, Dieter; Wolf, Theo; and Fell, Wolfgang, 4,259,700, Cl. 360-95.000.
Hofmann, Karl; and Norberg, Helmut, 4,258,883, Cl. 239-124.000.
Maisch, Wolfgang; and Constanty, Alain, 4,258,682, Cl. 123-333.000.
Maucher, Edmund; Hofer, Friedrich-Wilhelm; and Schwerin, Gunther, 4,258,610, Cl. 91-445.000.
Moeder, Helmut; and Schirmer, Guenter, 4,259,623, Cl. 318-249.000.
Rubel, Erich, 4,258,813, Cl. 180-168.000.
Seibicke, Horst, 4,259,624, Cl. 318-282.000.
Volz, Werner; Russeler, Friedrich; Ritter, Ernst; and Schwartz, Reinhard, 4,258,675, Cl. 123-374.000.

Roberts, Russell J.; and Leisner, Kenneth F., to Gem Manufacturing, Inc. Wood buck. 4,258,907, Cl. 269-69.000.

Robeson, Lloyd M., to Union Carbide Corporation. Polyarylate containing blends. 4,259,458, Cl. 525-68.000.

Robinson, Charles E. Apparatus for scale and slag removal. 4,258,506, Cl. 51-76.00R.

Robinson, Ralph L., Jr.: *See*—
Edelman, Brian S.; and Robinson, Ralph L., Jr., 4,259,719, Cl. 364-200.000.

Rocco, Frank L.: *See*—
Marmo, Don; and Rocco, Frank L., 4,259,355, Cl. 426-5.000.

Rockola, Donald C.; Schneider, Michael; and Distaso, Leonard A. Automatic phonograph bonus award system. 4,258,838, Cl. 194-1.00R.

Rockwell International Corporation: *See*—
Campbell, Gordon D.; Alexander, Robert H.; and Atwell, George C., 4,258,798, Cl. 173-168.000.
Stratton, Harold S., 4,258,546, Cl. 60-259.000.

Rockwell-Rimoldi, S.p.A.: *See*—
Bonalumi, Pietro, 4,258,639, Cl. 112-322.000.

Rodrigo, Peter; Whalen, Kemener J.; and French, David W., to Johns-Manville Corporation. Bell end of a bell and spigot joint. 4,258,935, Cl. 285-21.000.

Rodzen, Richard A.: *See*—
Sessions, Robert W.; Jeslis, Jerome; and Rodzen, Richard A., 4,258,722, Cl. 128-753.000.

Roger, Harry, to Roy, J. Edwin, a part interest. Adjustable pressure sensing piston mechanism. 4,258,741, Cl. 137-270.000.

Rogers, Alvin D.: *See*—
Hawley, Royal T.; Kalyan, Jagdish C.; Rogers, Alvin D.; and Sheppard, Monte G., 4,258,834, Cl. 191-12.20R.

Rogers, David L. Nozzle extension system for caulking gun. 4,258,884, Cl. 239-390.000.

Rohm GmbH: *See*—
Boeing, Joseph; and Mueller, Hermann A., 4,259,186, Cl. 210-198.200.

Rohm and Haas Company: *See*—
Aller, Harold E.; Kilbourn, Edward E.; Weiler, Ernest D.; and Weir, William D., 4,259,330, Cl. 424-200.000.
Johnson, Wayne O., 4,259,510, Cl. 560-21.000.
Machleder, Warren H.; and Bollinger, Joseph M., 4,259,086, Cl. 44-58.000.
Miller, George A.; and Chan, Hak-Foon, 4,259,339, Cl. 424-269.000.

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Rolski, Stanislaw, to Eli Lilly and Company. Method of preparing vindesine sulfate. 4,259,242, Cl. 260-244.400.

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Roosa, Vernon D.; and Roosa, Peter V. Extension lighter. 4,259,059, Cl. 431-254.000.
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Rorie, Jessie O. Suspension means for smoke ejectors. 4,258,895, Cl. 248-544.000.
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Roseman, Garry R.: *See—*
Jaszka, Daniel J.; Gall, Ralph J.; and Roseman, Garry R., 4,259,149, Cl. 162-29.000.
Rosenau, Clifford M., to Armstrong Cork Company. Method and apparatus for measuring the moisture content of wood. 4,259,633, Cl. 324-65.00R.
Ross, Donald R., Sr., to U-S Safety Trolley Corporation. Trolley rail section. 4,258,835, Cl. 191-23.00A.
Ross, Joseph A.; and Stern, Howard K., to Dynell Electronics Corporation. Methods for use in definition of object surfaces. 4,259,017, Cl. 356-375.000.
Ross, William J.; Todd, Alec; and Verge, John P., to Lilly Industries Limited. Oxazole carbamates, formulations and asthma treatment. 4,259,343, Cl. 424-272.000.
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Rothfuss, Georg: *See—*
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Rothmans of Pall Mall Canada Limited: *See—*
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Roussy, Georges; Berteaud, Andre-Jean; and Thiebaut, Jean-Marie, to Agence Nationale de Valorisation de la Recherche (ANVAR). Microwave applicator. 4,259,561, Cl. 219-10.55A.
Rowell, George W., to Quality Bedding and Litter, Inc. Animal litter and process and structure for making same. 4,258,659, Cl. 119-1.000.
Roy, J. Edwin: *See—*
Roger, Harry, 4,258,741, Cl. 137-270.000.
Rubel, Erich, to Robert Bosch GmbH. Apparatus for automatic guidance of a trackless vehicle. 4,258,813, Cl. 180-168.000.
Rudolf, Peter; Steck, Werner; Sarnecki, Wilhelm; and Jaeckh, Christof, to BASF Aktiengesellschaft. Manufacture of acicular magnetic iron oxide. 4,259,368, Cl. 427-130.000.
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Rueckl, Roger L., to United States Steel Corporation. Coke oven patching and sealing material. 4,259,120, Cl. 106-58.000.
Ruf, Wolfgang: *See—*
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Ruppel, Wolfgang; Hetzler, Ullrich; Vogt, Horst; and Wurfel, Peter. Method for creating a ferroelectric or pyroelectric body. 4,259,365, Cl. 427-46.000.
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Russell, Robert L. Apparatus for sealing floating roof tanks. 4,258,858, Cl. 220-222.000.
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Rutman, Grigory I.: *See—*
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Ruyten, Henricus M.; and Veigl, Johann, to U.S. Philips Corporation. Torsion spring clutch. 4,258,556, Cl. 64-30.00E.
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Ryker, John; and Gillespie, Kenneth D., to General Motors Corporation. Load sharing system for multiple engine power plants. 4,258,552, Cl. 60-711.000.
S. A. Platt, Inc.: *See—*
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Saeki, Hideo: *See—*
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St. Clair, Alfred L. Method and means for anchoring a dismountable building. 4,258,514, Cl. 52-86.000.
St. Cyr, Napoleon. Moving automated toll collectors. 4,258,502, Cl. 49-49.000.
Saito, Hideaki: *See—*
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Saito, Isamu; Aoyagi, Koshiki; Okumura, Masatoshi; Banba, Masayoshi; and Shibahara, Naoki, to Dainippon Ink & Chemicals, Inc. Colored polyvinyl chloride paste composition prepared using premixture of pigment and aromatic carboxylic acid ester. 4,259,225, Cl. 260-31.80B.
Saito, Kazuhisa; Miyatake, Fumio; and Shibata, Kunio, to Toho Beslon Co., Ltd.; and Nisshin Spinning Co., Ltd. Brake lining material. 4,259,397, Cl. 428-288.000.
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Saito, Takeshi: *See—*
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Salem Tool Company, The: *See—*
Horning, Frederick G.; Pozniko, John M.; and Welch, Karl H., 4,258,796, Cl. 175-52.000.
Sales, Franklin D. Solar heating apparatus. 4,258,698, Cl. 126-440.000.
Salivar, Jaroslav: *See—*
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Sallander, Hakan. Tool fastening means for a press. 4,258,620, Cl. 100-224.000.
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Salmon, Peter C.; and Salmon, David M., to Santek, Inc. Thermal print head. 4,259,676, Cl. 346-76.0PH.
Salomon, Georges P. J., to S.A. Etablissements Francois Salomon & Fils. Ski boot. 4,258,482, Cl. 36-121.000.
Salvesen, William R. Apparatus and method for installing electrical connectors. 4,258,469, Cl. 29-884.000.
Samata, Kozo: *See—*
Mori, Osamu; Yoshizawa, Takanao; and Samata, Kozo, 4,258,516, Cl. 52-126.000.
Samoto, Masao, to Bridgestone Tire Company Limited. Pneumatic radial tire with zero degree damper layers between belt plies. 4,258,775, Cl. 152-361.00R.
Sanders, Nicholas A. Engine heating device. 4,258,677, Cl. 123-142.500.
Sandhu, M. Akram: *See—*
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Sandoz Ltd.: *See—*
Bollingen, Pietro; and Krieger, Manfred, 4,259,523, Cl. 562-500.000.
Sands, Robert E., to Mueller Co. Service clamp for plastic pipe or the like. 4,258,941, Cl. 285-197.000.
Sandstedt, Gary O. Electrical communications system. 4,259,746, Cl. 455-600.000.
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Sato, Masamichi: *See*—
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Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Correction label applying device for a label printing machine. 4,259,138, Cl. 156-363.000.
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Savage, William T., to Wehr Corporation. Brick press frame having prestressed columns. 4,259,054, Cl. 425-344.000.
Savin Corporation: *See*—
Mangal, Norman F.; and Swidler, Ronald, 4,259,003, Cl. 355-3.0CH.
Sawatsky, Henry. Eye shade and method of producing eye shades. 4,258,437, Cl. 2-12.000.
Sawayama, Takehiro; Ito, Ichizo; Aga, Toshio; and Ando, Tetsuo, to Yokogawa Electric Works, Ltd. Force detector. 4,258,565, Cl. 73-141.00R.
Sawn, George W., to United States of America, Navy. Quick releasing high strength connector. 4,258,888, Cl. 244-17.170.
Saxman, William C., to Dresser Industries, Inc. Low cutter load raise head. 4,258,805, Cl. 175-344.000.
Say, Geoffrey R., to Exxon Research and Engineering Co. Removal of acidic compounds from gaseous mixtures. 4,259,301, Cl. 423-228.000.
SBR Lab, Inc.: *See*—
McCue, John P.; and Bramson, Mogens L., 4,258,723, Cl. 128-767.000.
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Schachter, Haim, to Tanis Ltd. Method of weather-proofing surfaces particularly concrete roofs. 4,259,127, Cl. 156-71.000.
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Schafer, Kenneth L. Slotted panel assembly. 4,258,662, Cl. 119-28.000.
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Scharl, Jurgen: *See*—
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Scharm, Dieter; Emmer, Ludwig; Reinhard, Theodor; and Kneib, Rudi, to Daimler-Benz Aktiengesellschaft. Air-conditioned passenger motor vehicle. 4,258,555, Cl. 62-244.000.
Scheel, Hansjoerg: *See*—
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Scheiber, Werner; and Aalrust, Per O., to Metallgesellschaft Aktiengesellschaft. Method of and apparatus for the surface cleaning of workpieces. 4,258,505, Cl. 51-7.000.
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Prezewowsky, Klaus; Steinbeck, Hermann; and Wiechert, Rudolf, 4,259,325, Cl. 424-238.000.
Scheying, Heinz, to Daimler-Benz Aktiengesellschaft. Fuel injection pump for air-compressing fuel-injected internal combustion engine. 4,259,040, Cl. 417-493.000.
Schiavone, Frank J., to Ball Corporation. Broadband microstrip antenna with automatically progressively shortened resonant dimensions with respect to increasing frequency of operation. 4,259,670, Cl. 343-700.0MS.
Schiavone, Lawrence M.: *See*—
Beni, Gerardo; Dautremont-Smith, William C.; Schiavone, Lawrence M.; and Shay, Joseph L., 4,258,984, Cl. 350-357.000.
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Schiffarth, Josef: *See*—
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Schiffner, Gerhard, to Siemens Aktiengesellschaft. Interferometer with a single-mode waveguide coil. 4,259,016, Cl. 356-350.000.
Schilling, Walter: *See*—
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Schmidt, Manfred; and Farber, Heinrich, to AGFA-Gevaert, A.G. Cassette for X-ray film. 4,259,586, Cl. 250-481.000.
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Schneider, Michael: *See*—
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Scholl, Hans-Joachim, to Bayer Aktiengesellschaft. Process for separating selenium, selenium compounds, sulfur and/or sulfur compounds from polyurethanes containing these elements and/or compounds. 4,259,511, Cl. 560-25.000.
Schols, Anton G.: *See*—
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Schwan, Frank J., to Celanese Corporation. Fiber reinforced composite shaft with metal connector sleeves secured by adhesive. 4,259,382, Cl. 428-36.000.
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Schwander, Hansrudolf: *See*—
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Science Union et Cie, Societe Francaise de Recherche Medicale: *See—*
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Scott, Burton W.: *See—*
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Scott, Dale; and Deets, Roy L., to Magic Mirror, Inc. Fashion previewing system. 4,258,478, Cl. 434-94.000.

Scott, David A.; and Van Buskirk, Lyman F., to United States of America, Navy. Derotation plate. 4,258,976, Cl. 350-96.200.

Scott, Kenneth G., to Polaroid Corporation. Method for forming silver precipitating nuclei. 4,259,116, Cl. 106-1.280.

Scott, Kenneth G.: *See—*
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Sze, Robert C.; and Scott, Peter B., 4,259,646, Cl. 331-94.50G.

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Segawa, Yoshihiro: *See—*
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Seibicke, Horst, to Robert Bosch GmbH. Arrangement for wiping a vehicle window. 4,259,624, Cl. 318-282.000.

Seifert, Helmut: *See—*
Fohl, Artur; Honl, Wolf-Dieter; and Seifert, Helmut, 4,258,887, Cl. 242-107.40A.

Seiko Koki Kabushiki Kaisha: *See—*
Kitai, Kiyoshi; Nakagawa, Tadashi; and Ishida, Hiroaki, 4,258,988, Cl. 354-25.000.
Watanabe, Masanori; Nakagawa, Tadashi; Nemoto, Ichiro; Onda, Eiichi; and Koyama, Mitsuo, 4,259,001, Cl. 354-266.000.

Seiko Seiki Kabushiki Kaisha: *See—*
Matsuno, Takeshi; and Kobayashi, Takeshi, 4,259,627, Cl. 318-600.000.

Seiko Tsukamoto: *See—*
Tsukamoto, Kenkichi, 4,258,730, Cl. 131-170.00R.

Seino, Shunji; Nishiyama, Ryota; and Nozaki, Masaoki, to Mitsubishi Paper Mills, Ltd. Electrical insulating material. 4,259,398, Cl. 428-283.000.

Seiscom Delta, Inc.: *See—*
Taner, M. Turhan; Sheriff, Robert E.; and Koehler, Fulton, 4,259,733, Cl. 367-61.000.

Sekine, Kenji: *See—*
Kaneko, Yoichi; Sekine, Kenji; Hase, Eiichi; and Endo, Akira, 4,259,743, Cl. 455-81.000.

Selbertinger, Ernst: *See—*
Schmidhammer, Ludwig; and Selbertinger, Ernst, 4,259,264, Cl. 570-247.000.

Selectra-Trac, Inc.: *See—*
Bloxham, Wayne N., 4,258,958, Cl. 303-6.00A.

Self, Craig: *See—*
Manos, Thomas; and Self, Craig, 4,258,837, Cl. 194-1.00N.

Selley, Wilfred G.: *See—*
Flack, Frederick C.; Ellis, Richard E.; Bundy, Kenneth; Miners, Francis; and Selley, Wilfred G., 4,258,709, Cl. 128-136.000.

Sellge, Hans, Jr.; and Browne, Tom M. Self-locking portable support structure. 4,258,915, Cl. 272-111.000.

Sengo, Takashi: *See—*
Ogino, Tetsuo; Sengo, Takashi; and Yoshiyama, Toshio, 4,259,565, Cl. 219-216.000.

Senoh, Fushi. Football goal structure. 4,258,923, Cl. 273-398.000.

Serlin, Irving, to Monsanto Company. Electrographic recording material. 4,259,425, Cl. 430-56.000.

SES, Incorporated: *See—*
Arnold, Anthony F., 4,259,409, Cl. 428-428.000.

Sessions, Robert W.; Jeslis, Jerome; and Rodzen, Richard A., to Ferris Manufacturing Corp. Disposable biopsy needle, particularly for bone marrow samplings. 4,258,722, Cl. 128-753.000.

SGS-ATES Componenti Elettronici S.p.A.: *See—*
Romano, Luigi, 4,259,685, Cl. 357-81.000.

Shackleton, Charles E. E.: *See—*
Turner, John H. W.; and Shackleton, Charles E. E., 4,259,298, Cl. 423-135.000.

Shah, Ishwarlal D., to United States of America, Interior. Decomposition of $AlCl_3.6H_2O$ in H_2 atmosphere. 4,259,311, Cl. 423-625.000.

Shakhov, Vladimir V.: *See—*
Spirin, Evgeny T.; Shakhov, Vladimir V.; Vagin, Viktor V.; Vainzof, Kaletta M.; and Bogushev, Zimel A., 4,259,063, Cl. 432-124.000.

Shank, Donald C. Muscle-relaxing reclining chair. 4,258,706, Cl. 128-33.000.

Shapiro, Eugene: *See—*
Smith, Warren F.; Vitek, John M.; and Shapiro, Eugene, 4,259,124, Cl. 148-2.000.

Sharp Kabushiki Kaisha: *See—*
Kobayashi, Takehiro, 4,259,566, Cl. 219-222.000.
Nakanishi, Kaoru; and Kanchi, Masahiro, 4,259,690, Cl. 358-183.000.
Nishimura, Kosuke; Nakagawa, Hirohide; and Haneda, Isamu, 4,259,668, Cl. 340-711.000.
Omori, Ryozo, 4,259,595, Cl. 307-452.000.
Tsujimoto, Susumu; Yamazaki, Hayao; Ozaki, Masayoshi; Kobayashi, Takehiro; Fujino, Toru; Yasuda, Mitsuo; Minami, Katsuji; and Itogawa, Zirou, 4,258,731, Cl. 132-9.000.

Shatila, Mounir A., to Ampco Foods Inc. Extrusion apparatus for food material. 4,259,051, Cl. 425-133.100.

Shaw, Robert F.: *See—*
Purwin, Paul E.; and Shaw, Robert F., 4,259,122, Cl. 136-258.000.

Shay, Joseph L.: *See—*
Beni, Gerardo; Dautremont-Smith, William C.; Schiavone, Lawrence M.; and Shay, Joseph L., 4,258,984, Cl. 350-357.000.

Shell Oil Company: *See—*
Bull, Michael J., 4,259,349, Cl. 424-305.000.
Kortbeek, Andras G. T. G.; and Van Der Nat, Adrianus A., 4,259,466, Cl. 526-142.000.
Van Zijll Langhout, Wouter C.; Pegels, Abraham A.; and Wijffels, Joannes B., 4,259,294, Cl. 422-190.000.

Shelton, William S.: *See—*
Dare, Roy R.; Houlgrave, Robert C.; and Shelton, William S., 4,258,743, Cl. 137-327.000.

Shen, Tsung-Ying: *See—*
Ponpipom, Mitree M.; Shen, Tsung-Ying; and Bugianesi, Robert L., 4,259,324, Cl. 424-180.000.

Shenton, Frederick A.: *See—*
Welch, Herbert E., 4,258,594, Cl. 81-57.290.

Shepherd, Robert G., to American Cyanamid Company. 4-[Cycloalkyl- or cycloalkenyl-amino(cycloalkyl- or cycloalkenyl-alkenyl)amino]-phenyl compounds, useful as hypolipidemic and antiatherosclerotic agents. 4,259,352, Cl. 424-316.000.

Sheppard, Monte G.: *See—*
Hawley, Royal T.; Kalyan, Jagdish C.; Rogers, Alvin D.; and Sheppard, Monte G., 4,258,834, Cl. 191-12.20R.

Sheriff, Robert E.: *See—*
Taner, M. Turhan; Sheriff, Robert E.; and Koehler, Fulton, 4,259,733, Cl. 367-61.000.

Shibahara, Naoki: *See—*
Saito, Isamu; Aoyagi, Koshiki; Okumura, Masatoshi; Banba, Masayoshi; and Shibahara, Naoki, 4,259,225, Cl. 260-31.80B.

Shibata, Kunio: *See—*
Saito, Kazuhisa; Miyatake, Fumio; and Shibata, Kunio, 4,259,397, Cl. 428-288.000.

Shibata, Takehiko: *See—*
Ando, Tadahiko; Shibata, Takehiko; Hayase, Eiji; and Ikawa, Shukuko, 4,259,446, Cl. 435-199.000.

Shibatani, Kyoichiro: *See—*
Yamauchi, Junichi; Masuhara, Eiichi; Nakabayashi, Nobuo; Shibatani, Kyoichiro; and Wada, Tooru, 4,259,075, Cl. 433-217.000.
Yamauchi, Junichi; Masuhara, Eiichi; Nakabayashi, Nobuo; Shibatani, Kyoichiro; and Wada, Tooru, 4,259,117, Cl. 106-35.000.

Shiga, Akinobu; Kakugo, Masahiro; Fukui, Yoshiharu; Yamada, Koji; Sadatoshi, Hajime; Wakamatsu, Kazuki; and Yoshioka, Hiroshi, to Sumitomo Chemical Company, Limited. Process for producing propylene-ethylene block copolymers. 4,259,461, Cl. 525-247.000.

Shimazaki, Yuzo: *See—*
Tada, Tsukasa; Shimazaki, Yuzo; Kohda, Masanobu; Kato, Hirohisa; and Saeki, Hideo, 4,259,407, Cl. 428-421.000.

Shimizu, Hiroki: *See—*
Watanabe, Tadahiko; and Shimizu, Hiroki, 4,259,119, Cl. 106-55.000.

Shimokawa, Toshiaki: *See—*
Tsuge, Noboru; Kuwakado, Satosi; Takei, Toshihiro; and Shimokawa, Toshiaki, 4,258,934, Cl. 280-806.000.

Shinkai, Kinya; Akazawa, Susumu; and Tominaga, Kiyonori, to Sony Corporation. Beam index color cathode ray tube. 4,259,687, Cl. 358-67.000.

Shinko Electric Industries Co., Ltd.: *See*—
Tabuchi, Seiichi; and Wakabayashi, Shinichi, 4,259,436, Cl. 430-314.000.
Shinshu Seiki Kabushiki Kaisha: *See*—
Hamaoka, Seiji; Mori, Masahiko; and Kobayashi, Takao, 4,259,026, Cl. 400-124.000.
Mitsui, Yoshihiro, 4,258,624, Cl. 101-99.000.
Shinto Paint Co., Ltd.: *See*—
Suzuki, Tameyuki; Shirakashi, Yoshio; Tsutsui, Nobukazu; Yamamoto, Sadao; Kubo, Akira; Teshima, Yasuhiko; and Kuranami, Nobuo, 4,259,163, Cl. 204-181.00T.
Shionogi & Co., Ltd.: *See*—
Oikawa, Hiroshi; Katagiri, Ken; Kawaguchi, Harumoto; Kitabatake, Tetsuo; and Nakamoto, Koji, 4,259,321, Cl. 424-120.000.
Shirakashi, Yoshio: *See*—
Suzuki, Tameyuki; Shirakashi, Yoshio; Tsutsui, Nobukazu; Yamamoto, Sadao; Kubo, Akira; Teshima, Yasuhiko; and Kuranami, Nobuo, 4,259,163, Cl. 204-181.00T.
Shirasu, Tatsumi: *See*—
Yasui, Tokumasa; Fukuda, Minoru; and Shirasu, Tatsumi, 4,258,465, Cl. 29-571.000.
Shiryaev, Vladimir I.: *See*—
Pryamilov, Jury S.; Nikolaichev, Nikolai A.; Negin, Gennady V.; Duntsev, Vsevolod Y.; Krylov, Robert M.; and Shiryaev, Vladimir I., 4,259,153, Cl. 176-30.000.
Shong, Robert G.: *See*—
Cobbs, Walter H., Jr.; and Shong, Robert G., 4,259,402, Cl. 428-310.000.
Showerlux Canada Ltd.: *See*—
Baus, Heinz G., 4,258,443, Cl. 4-557.000.
Shu, Chi-Kuen; Mookherjee, Braja D.; and Vock, Manfred H., to International Flavors & Fragrances Inc. 3,5-Di-(2-methylpropyl)-1,2,4-trithiolane and uses thereof for augmenting or enhancing the flavor or aroma of a foodstuff. 4,259,507, Cl. 549-34.000.
Shugart, Jack I.: *See*—
Eshnaur, Helen E.; and Shugart, Jack I., 4,258,667, Cl. 119-159.000.
Shuman, Robert T.: *See*—
Smithwick, Jr. Edward L.; Frederickson, Robert C. A.; and Shuman, Robert T., 4,259,234, Cl. 260-112.50R.
Sieg, Robert A.: *See*—
Pearson, Arthur C.; and Sieg, Robert A., 4,258,830, Cl. 188-52.000.
Siemens Aktiengesellschaft: *See*—
Aulich, Hubert; and Grabmaier, Josef, 4,259,100, Cl. 65-11.00W.
Buchner, Klaus; and Haerten, Rainer, 4,258,575, Cl. 73-626.000.
Krumme, Hans J., 4,259,584, Cl. 250-445.00T.
Kuznia, Christian, 4,259,721, Cl. 364-414.000.
Opitz, Heinrich; and Montag, Bernhard, 4,259,431, Cl. 430-199.000.
Politycki, Alfred; Hieber, Konrad; and Stolz, Manfred, 4,258,658, Cl. 118-719.000.
Schiffner, Gerhard, 4,259,016, Cl. 356-350.000.
Zander, Hans-Hermann, 4,259,714, Cl. 363-37.000.
Siemens-Allis, Inc.: *See*—
Patel, Amrut R.; and Hansen, Donald M., 4,259,097, Cl. 55-316.000.
Sifniades, Stylianos; Lahav, Meir; and Boyle, William J., Jr., to Allied Chemical Corporation. Resolution of enantiomeric complexes of nickelous chloride and alpha-aminocaprolactam. 4,259,239, Cl. 260-239.30R.
Sih, John C., to Upjohn Company, The. 19-Hydroxy-19-methyl-6-hydroxy-PGI_1 compounds. 4,259,245, Cl. 260-346.220.
Sih, John C., to Upjohn Company, The. 19-Hydroxy-13,14-dihydro-PG_1compounds. 4,259,513, Cl. 560-121.000.
Sih, John C., to Upjohn Company, The. 19-Hydroxy-13,14-dihydro-PG_2 compounds. 4,259,514, Cl. 560-121.000.
Sih, John C., to Upjohn Company, The. 19-Hydroxy-6-oxo-PGF_1 intermediates. 4,259,515, Cl. 560-121.000.
Sih, John C., to Upjohn Company, The. 19-Hydroxy-inter-oxa-13,14-dihydro-PG_1 compounds. 4,259,516, Cl. 560-121.000.
Sih, John C., to Upjohn Company, The. 19-Hydroxy-trans-2,3-didehydro-13,14-dihydro-PG_1 compounds. 4,259,517, Cl. 560-121.000.
Sih, John C., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-19,20-didehydro-PG_1 compounds. 4,259,528, Cl. 568-379.000.
Sih, John C., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-19,20-didehydro-13,14-dihydro-PG_1 compounds. 4,259,529, Cl. 568-379.000.
Simms, Charles C. Portable lectern. 4,258,833, Cl. 190-11.000.
Simons, Donald M., to Du Pont de Nemours, E. I., and Company. Polypropylene compositions. 4,259,230, Cl. 260-42.460.
Simonsen, Michael G.: *See*—
Curry, Robert E.; Simonsen, Michael G.; and Schwartz, Eric D., 4,259,289, Cl. 422-64.000.
Sims, Peter S.; Heslam, Robin S.; and Morris, Richard L., to Lever Brothers Company. Bleaching and cleaning compositions. 4,259,200, Cl. 252-102.000.
Sindelar, Zdenek: *See*—
Kamenicky, Jan; Michl, Jan; Sindelar, Zdenek; Ibl, Stanislav; and Salivar, Jaroslav, 4,259,622, Cl. 318-86.000.
Sizer, Phillip S.; Pearce, Joseph L.; and Dowden, Sanford R., to Otis Engineering Corporation. Underwater completion habitat. 4,258,794, Cl. 166-356.000.
Sjostrand, Gunnar. Plucking mechanism for a stringed instrument. 4,258,603, Cl. 84-258.000.
Skinner, James R.; and Lytle, John D., to M. U. Engineering & Mfg., Inc. Lens cell. 4,258,982, Cl. 350-252.000.
Slager, James E.; and Brothers, Charles E., to Miles Laboratories, Inc. Process for the preparation of 2,5-dioxo-3H, 6H-furo(3,2-b)furan-3a,-6a-diacetic acid. 4,259,243, Cl. 260-343.600.
Slater, Gary L., to General Electric Company. Optimal control for a gas turbine engine. 4,258,545, Cl. 60-226.00R.
Slaugh, Mervin J. Carousel tool and parts kit. 4,258,962, Cl. 312-125.000.
Smead, Robert G.: *See*—
Bagby, Thomas L.; Demeny, Gary L.; and Smead, Robert G., 4,258,655, Cl. 118-635.000.
Smearing, Robert W., to General Electric Company. Storage stable polyester monomer compositions with inhibitor, promoter, and stabilizer. 4,259,228, Cl. 260-40.00R.
Smiley, Charles F.: *See*—
Monahan, John F.; Smiley, Charles F.; and Wymer, Arthur C., 4,259,691, Cl. 358-219.000.
Smith, Brace C.: *See*—
Gebhart, Daniel E.; Smith, Brace C.; Young, D. Craig; and Damerell, Jerry A., 4,258,544, Cl. 60-39.320.
Smith, Charles L.: *See*—
Minnick, L. John; Webster, William C.; and Smith, Charles L., 4,259,271, Cl. 264-8.000.
Smith, Dennis D., to Illinois Tool Works Inc. Thermal cut-off device with an activating spring that is held in a prestressed condition by a thermally fusible pellet. 4,259,656, Cl. 337-407.000.
Smith, Ernest L., to Phillips Petroleum Company. Method of sealing a container. 4,258,529, Cl. 53-478.000.
Smith, Francis L.: *See*—
Ward, Kent G. McB.; and Smith, Francis L., 4,259,034, Cl. 414-24.600.
Smith, Gerald T., to GTE Products Corporation. Multiple gaseous lamp electronic ballast circuit. 4,259,616, Cl. 315-256.000.
Smith International, Inc.: *See*—
Fischer, John F.; and Foor, Elton R., 4,258,807, Cl. 175-375.000.
Smith, John C.: *See*—
Britton, Arthur; Smith, John C.; Davis, Roger I.; and Page, John A., 4,259,379, Cl. 427-356.000.
Smith, Robert K.; and Votta, Gerald A., to Electric Power Research Institute. Thin arc runner for arc spinner interrupter. 4,259,554, Cl. 200-147.00R.
Smith, Terrence: *See*—
Moore, Thomas S.; and Smith, Terrence, 4,258,932, Cl. 280-781.000.
Smith, Warren F.; Vitek, John M.; and Shapiro, Eugene, to Olin Corporation. Modified brass alloys with improved stress relaxation resistance. 4,259,124, Cl. 148-2.000.
Smithwick, Jr. Edward L.; Frederickson, Robert C. A.; and Shuman, Robert T., to Eli Lilly and Company. Analgesic compounds. 4,259,234, Cl. 260-112.50R.
Smythe, William J., to Technicon Instruments Corporation. Metering device. 4,259,291, Cl. 422-82.000.
Snell, James L.; Darby, Albert D., Jr.; and Cobb, Raymond F., to Harris Corporation. Sequential detection system. 4,259,740, Cl. 375-99.000.
Snyder, Robert H., to Uniroyal, Inc. Tire and rim assembly with dispensing means mounted in a balanced array. 4,258,771, Cl. 152-330.0RF.
Societa' Italiana Resine S.I.R. S.p.A.: *See*—
Buzio, Pierpaolo; and Edefonti, Lucio, 4,259,412, Cl. 428-516.000.
Societe Alsacienne de Constructions Mecaniques de Mulhouse: *See*—
Le Chatelier, Jacques; and Kueny, Michel, 4,258,541, Cl. 57-58.890.
Societe Anonyme dite: Compagnie Generale d'Electricite: *See*—
Godard, Bruno, 4,259,617, Cl. 315-326.000.
Societe Anonyme dite: Les Cables de Lyon: *See*—
Litauer, Andre, 4,259,544, Cl. 174-102.00R.
S.A. Etablissements Francois Salomon & Fils: *See*—
Salomon, Georges P. J., 4,258,482, Cl. 36-121.000.
s.a. Texaco Belgium n.v.: *See*—
Gale, Sidney T. G.; and Spreutels, Paula J. J., 4,259,169, Cl. 208-25.000.
Societe d'Assistance Technique pour Produits Nestle S.A.: *See*—
Wahli, Christian, 4,259,053, Cl. 425-222.000.
Soelberg, Kenneth B.; Stark, Marvin M.; and Yamaguchi, Akia, to Marvin M. Stark Research Foundation. Dental wedge system. 4,259,070, Cl. 433-149.000.
Sofiman, Societe Anonyme: *See*—
Baize, Rene, 4,259,377, Cl. 427-346.000.
Sogi, Toshiyuki: *See*—
Makino, Shigeo; Watanabe, Shigeo; and Sogi, Toshiyuki, 4,258,769, Cl. 152-209.00R.
Sohler, Manfred, to Hubert Sohler GmbH. Apparatus for blowing and suctioning fiber fly from textile machines. 4,258,450, Cl. 15-312.00A.
Solaroli, Sergio, to Finike Italiana Marposs, S.p.A. Apparatus for sorting workpieces belonging to different classes. 4,258,850, Cl. 209-655.000.
Solid Photography, Inc.: *See*—
DiMatteo, Paul; and Stern, Howard, 4,259,589, Cl. 250-558.000.
Solvay & Cie.: *See*—
della Faille d'huysse, Gaetan; Clausse, Jacques; and Boxus, Louis, 4,259,640, Cl. 324-439.000.
Lorquet, Robert, 4,259,203, Cl. 252-174.140.
Sommerfeld, George L., to Tennant Company. Surface sweeping machine. 4,258,451, Cl. 15-352.000.
Sony Corporation: *See*—
Hatakeyama, Akira; Matsuyama, Atsuo; and Moritake, Yutaka, 4,259,625, Cl. 318-328.000.

Shinkai, Kinya; Akazawa, Susumu; and Tominaga, Kiyonori, 4,259,687, Cl. 358-67.000.
Takada, Shinji, 4,259,698, Cl. 360-70.000.
Uchiyama, Masami; Fuzimori, Toru; and Mori, Toshio, 4,259,603, Cl. 310-68.00B.

Sopko, John F.: *See*—
Postupack, Dennis S.; and Sopko, John F., 4,259,371, Cl. 427-226.000.

Sorensen, Erik L.; Wolff, Per; and Larsen, Hans-Ole, to Coloplast A/S. Magnetic system for use in sealing body openings. 4,258,705, Cl. 128-1.00R.

Sorensen, Eugene R.: *See*—
Louis, Paul R.; Sorensen, Eugene R.; and Ballard, Thomas R., 4,259,286, Cl. 264-555.000.

Southco, Inc.: *See*—
Bisbing, Robert H.; and Frame, William R., 4,258,596, Cl. 81-436.000.

Southwall Corporation, The: *See*—
Chahroudi, Day; and Wellesley-Miller, Sean R., 4,259,401, Cl. 428-306.000.

Speaker, John A., to J. W. Speaker Corp. Socket for bulb with bent wire terminals. 4,258,971, Cl. 339-52.00S.

Spector, George: *See*—
Thurston, Jay D.; and Spector, George, 4,258,456, Cl. 24-117.000.

Speier, John L.: *See*—
Malek, James R.; and Speier, John L., 4,259,103, Cl. 71-67.000.

Spencer, Kenneth E.: *See*—
Jackson, Keith L.; Reece, James J.; and Spencer, Kenneth E., 4,258,629, Cl. 105-167.000.

Spencer, Phillip B.: *See*—
Drutchas, Gilbert H.; and Spencer, Phillip B., 4,259,044, Cl. 418-82.000.

Sperry Corporation: *See*—
De Coene, Frans J. G. C.; and Vansteelant, Marc G., 4,259,035, Cl. 414-38.000.
Munro, James A., 4,258,540, Cl. 56-341.000.
Phillips, Edwin R.; and Stankiewicz, Raymond J., 4,259,006, Cl. 355-10.000.

Spicer, Arnold, to New Generation Foods, Inc. High protein wheat product. 4,259,359, Cl. 426-62.000.

Spies, Martin: *See*—
Frungel, Frank; and Spies, Martin, 4,259,592, Cl. 250-574.000.

Spiewok, Leonhard, to Escher Wyss Limited. Centrifuge screen. 4,259,136, Cl. 156-293.000.

Spirin, Evgeny T.; Shakhov, Vladimir V.; Vagin, Viktor V.; Vainzof, Kaletta M.; and Bogushev, Zimel A. Apparatus for a heat treatment of products. 4,259,063, Cl. 432-124.000.

Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. Use for augmenting or enhancing the flavor or aroma of smoking tobacco of 6-hydroxy-2,6-dimethyl-heptanal. 4,258,727, Cl. 131-9.000.

Sprecker, Mark A.; Hall, John B.; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. Benzodioxanones and organoleptic uses thereof. 4,259,214, Cl. 252-522.00R.

Spreutels, Paula J. J.: *See*—
Gale, Sidney T. G.; and Spreutels, Paula J. J., 4,259,169, Cl. 208-25.000.

Stadelhofer, Jurgen; and Collin, Gerd, to Rutgerswerke Aktiengesellschaft. Process for the separation of quinoline-insoluble components from coal tar pitch. 4,259,171, Cl. 208-45.000.

Stahl, Eugen H., to Hans Grobe GmbH & Co. KG. Method and apparatus for producing a reinforced plastic pipe. 4,259,139, Cl. 156-428.000.

Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; Pichler, Ludwig; Hoefke, Wolfgang; and Gaida, Wolfram, to Boehringer Ingelheim GmbH. Bradycardiac pharmaceutical compositions and method of use. 4,259,346, Cl. 424-273.00R.

Stahlwerke Peine-Salzgitter AG: *See*—
Laux, Walter; Hebel, Rudolf; Artelt, Peter; Esfeld, Gerhard; and Jacob, Arnold, 4,259,064, Cl. 432-222.000.

Stallard, Jerrel L. Reversing plug connector. 4,258,969, Cl. 339-14.00P.

Stamires, Dennis: *See*—
Alafandi, Hamid; and Stamires, Dennis, 4,259,210, Cl. 252-438.000.

Standard Abrasives, Inc.: *See*—
Wray, Daniel J.; and Regnier, Alexis G., 4,258,509, Cl. 51-334.000.

Standard Oil Company, The: *See*—
Guttmann, Andrew T.; and Grasselli, Robert K., 4,259,533, Cl. 568-697.000.

Stankiewicz, Raymond J.: *See*—
Phillips, Edwin R.; and Stankiewicz, Raymond J., 4,259,006, Cl. 355-10.000.

Stark, Friedrich: *See*—
Aichert, Hans; Stark, Friedrich; Stephan, Herbert; and Hoffmann, Otto-Horst, 4,258,645, Cl. 118-50.000.

Stark, Marvin M.: *See*—
Soelberg, Kenneth B.; Stark, Marvin M.; and Yamaguchi, Akia, 4,259,070, Cl. 433-149.000.

State Board of Higher Education for and on Behalf of the University of Oregon: *See*—
Dolby, Lloyd J., 4,259,512, Cl. 560-119.000.

Stauffer Chemical Company: *See*—
Lauck, Robert M.; and Melachouris, Nicholas, 4,259,363, Cl. 426-646.000.
Teach, Eugene G., 4,259,500, Cl. 548-215.000.
Walker, Francis H., 4,259,484, Cl. 544-87.000.

Steck, Werner: *See*—
Rudolf, Peter; Steck, Werner; Sarnecki, Wilhelm; and Jaeckh, Christof, 4,259,368, Cl. 427-130.000.

Steenbergen, Suzanna M.; and Young, Kevin M., to Merck & Co., Inc. Organism ATCC 31643. 4,259,451, Cl. 435-253.000.

Stees, Gene R. Structure for forming concrete troughs in the ground. 4,258,897, Cl. 249-11.000.

Stehman, Carl J., to Wescom Switching, Inc. Dialed number to function translator for telecommunications switching system control complex. 4,259,549, Cl. 179-18.0ES.

Stein, Marc T., to Motorola, Inc. Comparison circuit having bidirectional hysteresis. 4,259,601, Cl. 307-359.000.

Steinbeck, Hermann: *See*—
Prezewowsky, Klaus; Steinbeck, Hermann; and Wiechert, Rudolf, 4,259,325, Cl. 424-238.000.

Steinberg, Mitchell I.: *See*—
Molloy, Bryan B.; and Steinberg, Mitchell I., 4,259,354, Cl. 424-329.000.

Steinbrecher, Bernhard. Method of and an installation for the automatic packing of stacks of articles. 4,258,527, Cl. 53-447.000.

Steiner, Peter, to Foster Wheeler Energy Corporation. Activation of coal. 4,259,304, Cl. 423-244.000.

Steinhilber, Helmut: *See*—
Lutz, Claus; Beha, Bernhard; and Nieter, Heinz G., 4,258,635, Cl. 111-52.000.

Stephan, Herbert: *See*—
Aichert, Hans; Stark, Friedrich; Stephan, Herbert; and Hoffmann, Otto-Horst, 4,258,645, Cl. 118-50.000.

Stephens, Dennis B. Oral retractor. 4,259,068, Cl. 433-140.000.

Sterling Drug Inc.: *See*—
Eggensperger, Heinz; Rehn, Dieter; Beilfuss, Wolfgang; and Nolte, Helmut, 4,259,383, Cl. 428-72.000.

Stern, Howard: *See*—
DiMatteo, Paul; and Stern, Howard, 4,259,589, Cl. 250-558.000.

Stern, Howard K.: *See*—
Ross, Joseph A.; and Stern, Howard K., 4,259,017, Cl. 356-375.000.

Stevenson, Irving C., to Thomas A. Short Co. Spring-loaded valve actuator. 4,258,903, Cl. 251-313.000.

Stifter, Francis J. Combination surge suppressor filter. 4,259,705, Cl. 361-56.000.

Stille, John K., to Polymer Sciences Corporation. Process for the carbonylation of diolefins. 4,259,519, Cl. 560-193.000.

Stillman, Ben S. DIP Top coating apparatus. 4,258,652, Cl. 118-249.000.

Stockhammer, Ernst: *See*—
Weiss, Hermann; and Stockhammer, Ernst, 4,258,583, Cl. 74-414.000.

Stoft, Paul E.: *See*—
Johannsmeier, Karl-Heinz; Stoft, Paul E.; and Larsen, Tor G., 4,259,019, Cl. 356-400.000.

Stoker, Arlon L.: *See*—
Williamson, Ernest W., 4,258,880, Cl. 237-56.000.

Stolley, Ronald M.: *See*—
Pearce, Richard E.; and Stolley, Ronald M., 4,258,539, Cl. 56-320.200.

Stolz, Manfred: *See*—
Politycki, Alfred; Hieber, Konrad; and Stolz, Manfred, 4,258,658, Cl. 118-719.000.

Stoner, Harry I., to United States of America, Air Force. Adjustable electronic circuit card supporter. 4,258,965, Cl. 312-266.000.

Stoody, Richard R., Jr.; and Adams, Ellsworth C., to Chrysler Corporation. Cam lubrication. 4,258,673, Cl. 123-90.340.

Stoss, Peter; Satzinger, Gerhard; and Herrmann, Manfred, to Warner-Lambert Company. Tricyclic sulphoximides. 4,259,494, Cl. 546-202.000.

Stott, Geoffrey: *See*—
Cole, William L.; Stott, Geoffrey; and Bowden, Humphrey G., 4,259,126, Cl. 148-12.00E.

Stout, James T., to Mead Corporation, The. Article carrier. 4,258,844, Cl. 206-188.000.

Stover, Dennis E., to Atlantic Richfield Company. Process for the solution mining of a mineral. 4,258,954, Cl. 299-4.000.

Strain, William E. Industrial noise abatement enclosure. 4,258,511, Cl. 52-79.100.

Strate, Klaus, to C. A. Weidmuller KG. Electrical socket connector. 4,258,972, Cl. 339-59.00R.

Stratton, Harold S., to Rockwell International Corporation. Propulsion system. 4,258,546, Cl. 60-259.000.

Streib, Richard A., to United Technologies Corporation. Muffler plug for gas turbine power plant. 4,258,822, Cl. 181-213.000.

Studsvik Energiteknik AB: *See*—
Margen, Peter H. E., 4,258,661, Cl. 119-3.000.

Stumvoll, Ernst: *See*—
Greutert, Albert; and Stumvoll, Ernst, 4,259,283, Cl. 264-152.000.

Sturm, Elmar; Eckhardt, Wolfgang; Gloor, Bernhard; and Nyfeler, Robert, to Ciba-Geigy Corporation. Process for the preparation of 1H-azole derivatives. 4,259,505, Cl. 548-262.000.

Styskin, Evgeny L.: *See*—
Gurvich, Yakov A.; Kumok, Simona T.; Latysheva, Galina G.; Rybak, Anna I.; Styskin, Evgeny L.; Liakumovich, Alexandr G.; Michurov, Jury I.; Filipova, Rufina A.; Yanshevsky, Vladimir A.; Rutman, Grigory I.; and Logutov, Igor J., 4,259,534, Cl. 568-720.000.

Sueda, Tetsuo: *See*—
Tokuhara, Mitsuhiro; Sueda, Tetsuo; Tanaka, Kazuo; and Hirose, Ryusho, 4,259,688, Cl. 358-107.000.

Sugano, Seiroku: *See*—
Ueda, Tetsuo; Ohta, Masuo; and Sugano, Seiroku, 4,259,177, Cl. 208-127.000.
Suganuma, Tsuneo: *See*—
Tsukuda, Yasuo; Imoto, Katsuyuki; Susa, Kenzo; Matsuyama, Iwao; and Suganuma, Tsuneo, 4,259,101, Cl. 65-18.000.
Sugita, Yoshiji: *See*—
Nakamura, Hiroaki; Kumita, Izumi; Sugita, Yoshiji; and Takagi, Hiedo, 4,259,448, Cl. 435-215.000.
Sugiyama, Naoshi, to VLSI Technology Research Association. Device comprising a circuit for making a beam exposure system effectively draw a repetitive pattern. 4,259,724, Cl. 364-491.000.
Suhara, Manabu; and Arai, Kiyotaka, to Asahi Glass Company Ltd. Solution of fluorinated polymer having carboxylic acid salt groups in polar hydroxylic solvent. 4,259,226, Cl. 260-33.40F.
Sukhov, Boris P.: *See*—
Boetes, Reinder; and Sukhov, Boris P., 4,258,568, Cl. 73-170.00A.
Sulic, Milan: *See*—
Neuenfeldt, Walter; Sulic, Milan; and Pollak, Gerd, 4,259,156, Cl. 176-87.000.
Sullivan, Daniel T.: *See*—
Kaman, Charles H.; Sullivan, Daniel T.; O'Loughlin, James F.; and Mudge, Craig, 4,259,718, Cl. 364-200.000.
Sulzer Morate GmbH: *See*—
Kunde, Klaus; and Schoffski, Klaus, 4,258,557, Cl. 66-9.00B.
Sumitomo Chemical Company, Limited: *See*—
Maruyama, Kunio, 4,259,307, Cl. 423-447.400.
Shiga, Akinobu; Kakugo, Masahiro; Fukui, Yoshiharu; Yamada, Koji; Sadatoshi, Hajime; Wakamatsu, Kazuki; and Yoshioka, Hiroshi, 4,259,461, Cl. 525-247.000.
Yasui, Seimei; Matsuda, Yoshinobu; Sagou, Masakazu; and Noguchi, Takanobu, 4,259,395, Cl. 428-248.000.
Sumitomo Electric Industries, Ltd.: *See*—
Nakane, Ryohei; Isomura, Shohei; Okita, Koichi; Kamijo, Eiji; and Nishimoto, Tatsuya, 4,259,209, Cl. 252-430.000.
Sumitomo Rubber Industries, Ltd.: *See*—
Nakasaki, Eiji, 4,258,772, Cl. 152-349.000.
Summa Corporation: *See*—
Korkosz, Gregory J., 4,258,890, Cl. 244-223.000.
Sundberg, Michael W.: *See*—
Frank, David S.; and Sundberg, Michael W., 4,259,313, Cl. 424-8.000.
Sundin, Johnny: *See*—
Persson, Erik; and Sundin, Johnny, 4,259,654, Cl. 336-84.00R.
Suo, Mikio, to United Technologies Corporation. Dual cycle heat pipe-method and apparatus. 4,258,780, Cl. 165-2.000.
Suomi, Roy A. Log splitter for a truck having a three-point snowplow hitch and hydraulic pressure system. 4,258,765, Cl. 144-193.00A.
Suovaniemi, Osmo A.; Ekholm, Pertti; and Kaukanen, Esko, to Kommanditttiyhtio Finnpipette Osmo A. Suovaniemi. Transfer device for analysis equipment. 4,259,290, Cl. 422-65.000.
Supan, Edward C.: *See*—
Dolowy, Joseph F., Jr.; Webb, Bradley A.; and Supan, Edward C., 4,259,112, Cl. 75-208.00R.
Surakka, Jorma; and Lankinen, Matti, to Enso-Gutzeit Osakeyhtio. Hydrocyclone. 4,259,180, Cl. 209-211.000.
Susa, Kenzo: *See*—
Tsukuda, Yasuo; Imoto, Katsuyuki; Susa, Kenzo; Matsuyama, Iwao; and Suganuma, Tsuneo, 4,259,101, Cl. 65-18.000.
Susor, William C., to Masstron Scale, Inc. Weighing apparatus. 4,258,810, Cl. 177-128.000.
Sutera, Richard: *See*—
Paranjpe, Suresh C.; Cox, Arthur; Scott, Burton W.; Nodov, Eugene; and Sutera, Richard, 4,259,696, Cl. 358-296.000.
Sutherland, Geoffrey, to University of Melbourne, The. Microsurgical instruments. 4,258,716, Cl. 128-318.000.
Sutton, Harry G., Jr.: *See*—
Pennell, William E.; and Sutton, Harry G., Jr., 4,259,152, Cl. 176-19.0LD.
Suzuki, Akira: *See*—
Murata, Moriyasu; and Suzuki, Akira, 4,259,215, Cl. 252-528.000.
Suzuki, Kihachi: *See*—
Tomomoto, Takanori; Suzuki, Kihachi; Oda, Shin-ichi; and Okuno, Toshimitsu, 4,259,231, Cl. 260-42.520.
Suzuki, Masaaki, to Fuji Photo Film Co., Ltd. Multilayer magnetic recording medium. 4,259,392, Cl. 428-212.000.
Suzuki, Tameyuki; Shirakashi, Yoshio; Tsutsui, Nobukazu; Yamamoto, Sadao; Kubo, Akira; Teshima, Yasuhiko; and Kuranami, Nobuo, to Shinto Paint Co., Ltd. Process for applying anticorrosive coating onto automobile body. 4,259,163, Cl. 204-181.00T.
Suzuki, Yasoji; and Iida, Tetsuya, to Tokyo Shibaura Denki Kabushiki Kaisha. Circuit for producing a polarity-reversed voltage with opposite polarity to that of a power supply voltage. 4,259,686, Cl. 307-262.000.
Suzuki, Yoichi: *See*—
Matsuo, Tatsuki; Ishizaki, Nobuo; and Suzuki, Yoichi, 4,259,092, Cl. 55-78.000.
Swann, David A. Electric switches. 4,259,552, Cl. 200-6.00R.
Swengel, Robert C., Jr.: *See*—
Reynolds, Charles E.; and Swengel, Robert C., Jr., 4,258,973, Cl. 339-95.00R.
Swidler, Ronald: *See*—
Mangal, Norman F.; and Swidler, Ronald, 4,259,003, Cl. 355-3.0CH.
Sybron Corporation: *See*—
Pietschmann, Helmut, 4,259,066, Cl. 433-78.000.
Sykora, John M., to Field Container Corp. Container assembly for ice-cream products. 4,258,875, Cl. 229-41.00B.
Synthelabo: *See*—
Balat, Roger; Illes, Joseph A.; Jacquemart, Jean-Francois V.; and Sarda, Christian, 4,258,724, Cl. 128-785.000.
Sze, Robert C.; and Scott, Peter B., to United States of America, Energy. High energy XeBr electric discharge laser. 4,259,645, Cl. 331-94.50G.
Sze, Robert C.; and Scott, Peter B., to United States of America, Energy. High energy KrCl electric discharge laser. 4,259,646, Cl. 331-94.50G.
Sze, Simon M.: *See*—
Lepselter, Martin P.; and Sze, Simon M., 4,259,680, Cl. 357-35.000.
Szilagyi, Geza; Kasztreiner, Endre; Kosary, Judit; Matyus, Peter; Huszti, Zsuzsa; Cseh, Gyorgy; Kenessey, Agnes; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, to Richter Gedeon Vegyeszeti Gyar Rt. Morpholino pyridazinylhydrazones. 4,259,328, Cl. 424-248.530.
Szomor nee Wundele, Maria: *See*—
Gonczi, Csaba; Korbonits, Dezso; Kiss, Pal; Palosi, Endre; Heja, Gergely; Szvoboda nee Kanzel, Ida; Cser nee Kun, Judit; Szomor nee Wundele, Maria; Kormoczi, Gyorgy; and Kelemen, Andras, 4,259,344, Cl. 424-273.00B.
Szvoboda nee Kanzel, Ida: *See*—
Gonczi, Csaba; Korbonits, Dezso; Kiss, Pal; Palosi, Endre; Heja, Gergely; Szvoboda nee Kanzel, Ida; Cser nee Kun, Judit; Szomor nee Wundele, Maria; Kormoczi, Gyorgy; and Kelemen, Andras, 4,259,344, Cl. 424-273.00B.
Tabuchi, Seiichi; and Wakabayashi, Shinichi, to Shinko Electric Industries Co., Ltd. Method of making a take-carrier for manufacturing IC elements. 4,259,436, Cl. 430-314.000.
Tachihara, Satoru: *See*—
Tokutomi, Seijiro; Ogawa, Ryota; Ohishi, Michiro; Nakamura, Kazuo; Jyojiki, Masao; and Tachihara, Satoru, 4,258,989, Cl. 354-25.000.
Tada, Tsukasa; Shimazaki, Yuzo; Kohda, Masanobu; Kato, Hirohisa; and Saeki, Hideo, to VLSI Technology Research Association. Radiation-sensitive positive resist. 4,259,407, Cl. 428-421.000.
Tagiang, Richard J.; and Ziolkowski, Walter C., to Carpenter Technology Corporation. Composite stainless steel boron-containing article. 4,259,413, Cl. 428-548.000.
Takada, Juichiro. Movable inboard belt guide for use in passive vehicle occupant restraint systems. 4,258,933, Cl. 280-804.000.
Takada, Shigeho, to Tokyo Shibaura Denki Kabushiki Kaisha. Complementary transistor switching circuit. 4,259,599, Cl. 307-255.000.
Takada, Shinji, to Sony Corporation. Speed and phase servo control apparatus. 4,259,698, Cl. 360-70.000.
Takagi, Hiedo: *See*—
Nakamura, Hiroaki; Kumita, Izumi; Sugita, Yoshiji; and Takagi, Hiedo, 4,259,448, Cl. 435-215.000.
Takahashi, Akira; and Ono, Yoshiro, to Ono, Yoshiro. Machining apparatus utilizing oscillation of tuning fork. 4,258,690, Cl. 125-30.0WD.
Takahashi, Hiroshi: *See*—
Yamasue, Kotaro; Takahashi, Hiroshi; Sakaki, Hirokazu; and Nishioka, Akira, 4,259,434, Cl. 430-302.000.
Takahashi, Kazuo: *See*—
Takizawa, Masaaki; Takahashi, Kazuo; and Matsubara, Noboru, 4,258,671, Cl. 123-90.160.
Takahashi, Shigeru; Ohshima, Iwao; Honda, Masaki; and Yamashita, Mizuho, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for detecting degradation of characteristics of arresters. 4,259,666, Cl. 340-647.000.
Takahashi, Takashi: *See*—
Ichinose, Noboru; Okuma, Hideo; Yokomizo, Yuji; Takahashi, Takashi; Nishihara, Mieko; and Katsura, Masaki, 4,259,292, Cl. 422-98.000.
Takahashi, Tatsuo; and Yamada, Osamu, to RCA Corporation. X-ray luminescent glasses. 4,259,587, Cl. 250-486.000.
Takahashi, Tsunehiko: *See*—
Mizobuchi, Yuzo; Sato, Masamichi; and Takahashi, Tsunehiko, 4,259,433, Cl. 430-296.000.
Takanashi, Yukio; and Matsumoto, Sadao, to Tokyo Shibaura Denki Kabushiki Kaisha. Electron gun assembly for cathode ray tubes and method of assembling the same. 4,259,610, Cl. 313-417.000.
Takano, Tetsuo. Rectangular electric contact for switch. 4,259,557, Cl. 200-275.000.
Takashima, Seisuke: *See*—
Nakaji, Osamu; Takashima, Seisuke; and Nakamura, Seishiro, 4,259,303, Cl. 423-239.000.
Takei, Toshihiro: *See*—
Tsuge, Noboru; Kuwakado, Satosi; Takei, Toshihiro; and Shimokawa, Toshiaki, 4,258,934, Cl. 280-806.000.
Takematsu, Tetsuo; Segawa, Hirozo; Miura, Takamaro; Ataka, Toshiei; Chatani, Michio; and Nakamura, Akira, to Kyowa Gas Chemical Industry Co. Ltd. 2,3-Dicyanopyrazines. 4,259,489, Cl. 544-336.000.
Takeuchi, Tomio: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Ishizuka, Masaaki; Watanabe, Kiyoshi; Yamashita, Toshiaki; Naoi, Noriyuki; and Hidaka, Takayoshi, 4,259,319, Cl. 424-117.000.
Takizawa, Masaaki; Takahashi, Kazuo; and Matsubara, Noboru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Variable valve lift mechanism used in an internal combustion engine. 4,258,671, Cl. 123-90.160.
Talmi, Yair, to Princeton Applied Research Corporation. Fiber optic polychromator. 4,259,014, Cl. 356-328.000.

Tamura, Kohki; Kahara, Toshiki; Horiba, Tatsuo; Ebato, Noboru; and Asai, Osamu, to Hitachi, Ltd.; and Hitachi Chemical Co. Ltd. Primary battery. 4,259,415, Cl. 429-90.000.

Tamura, Shoichi: *See*—
Abe, Kazunobu; Tamura, Shoichi; and Matsuda, Tosiaki, 4,259,057, Cl. 425-463.000.

Tamura, Tooru: *See*—
Akabane, Tadashi; and Tamura, Tooru, 4,259,099, Cl. 55-482.000.

Tanabe, Hiromichi, to Amada Company, Limited. Bandsaw blade guiding apparatus for bandsaw machines. 4,258,601, Cl. 83-820.000.

Tanaka, Akira; Yoshida, Akio; and Haino, Kozo, to Mitsubishi Paper Mills, Ltd. Direct positive silver halide emulsion. 4,259,439, Cl. 430-582.000.

Tanaka, Kazuo: *See*—
Kashihara, Toshitsugu; and Tanaka, Kazuo, 4,259,615, Cl. 315-241.00P.
Tokuhara, Mitsuhiro; Sueda, Tetsuo; Tanaka, Kazuo; and Hirose, Ryusho, 4,259,688, Cl. 358-107.000.

Tanaka, Kyoichi; and Tsuzuki, Akira, to Toyo Contact Lens Co., Ltd. Cleaning and preservative solution for contact lenses. 4,259,202, Cl. 252-107.000.

Tanaka, Mamoru; and Saito, Hideaki, to Bridgestone Tire Company Limited. Transport hose with leak detecting structure. 4,259,553, Cl. 200-81.00R.

Tanaka, Osamu: *See*—
Uesugi, Kyozo; and Tanaka, Osamu, 4,258,996, Cl. 354-196.000.

Tanaka, Yukiyasu: *See*—
Noguchi, Masaaki; Tanaka, Yukiyasu; and Igarashi, Isao, 4,258,669, Cl. 123-51.0BA.

Taner, M. Turhan; Sheriff, Robert E.; and Koehler, Fulton, to Seiscom Delta, Inc. Multi-dimensional seismic imaging. 4,259,733, Cl. 367-61.000.

Tang, Reginald T.: *See*—
Mares, Frank; Jacobson, Stephen E.; and Tang, Reginald T., 4,259,527, Cl. 568-311.000.

Tanigaki, Hidetoshi, to Furuno Electric Co. Ltd. Detection system. 4,259,669, Cl. 343-5.0EM.

Tanis Ltd.: *See*—
Schachter, Haim, 4,259,127, Cl. 156-71.000.

Tarantola, Luciano: *See*—
Canevari, Cesare; and Tarantola, Luciano, 4,258,543, Cl. 57-212.000.

Tardos, Laszlo: *See*—
Szilagyi, Geza; Kasztreiner, Endre; Kosary, Judit; Matyus, Peter; Huszti, Zsuzsa; Cseh, Gyorgy; Kenessey, Agnes; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, 4,259,328, Cl. 424-248.530.

Task, Harry L. High contrast optical fingerprint recorder. 4,258,994, Cl. 354-75.000.

Tateoka, Masamichi; Asano, Toshiaki; Minoura, Kazuo; and Minami, Setsuo, to Canon Kabushiki Kaisha. Scanning device with optical path length compensator. 4,259,004, Cl. 355-8.000.

Teach, Eugene G., to Stauffer Chemical Company. 3-Perhaloalkylhydroxy-oxazolidines and thiazolidines herbicidal antidotes. 4,259,500, Cl. 548-215.000.

Technicon Instruments Corporation: *See*—
Smythe, William J., 4,259,291, Cl. 422-82.000.

Tecl, Bohuslav: *See*—
Fahrbach, Erich; Graber, Adolf; Knoke, Jurgen; Schweizer, Helmer; and Tecl, Bohuslav, 4,259,390, Cl. 428-195.000.

Tehan, James F.; and Bradley, Robert L., to General Signal Corporation. Poke-through electrical fitting. 4,259,542, Cl. 174-48.000.

Teledyne, Inc.: *See*—
Wiesler, Mordechai, 4,258,928, Cl. 279-1.00L.

Teledyne Industries, Inc.: *See*—
DuMez, Frank M., 4,258,474, Cl. 33-174.00P.

Temple, Victor A. K.: *See*—
Adler, Michael S.; and Temple, Victor A. K., 4,259,683, Cl. 357-64.000.

Tennant Company: *See*—
Sommerfeld, George L., 4,258,451, Cl. 15-352.000.

Terlecki, Leo: *See*—
Fusselman, Robert M.; and Terlecki, Leo, 4,258,963, Cl. 312-194.000.

Teruyama, Hideo, to Kayabakogyokabushikikaisha. Gear pump or motor units with sleeve coupling for shafts. 4,259,045, Cl. 418-200.000.

Teshima, Yasuhiko: *See*—
Suzuki, Tameyuki; Shirakashi, Yoshio; Tsutsui, Nobukazu; Yamamoto, Sadao; Kubo, Akira; Teshima, Yasuhiko; and Kuranami, Nobuo, 4,259,163, Cl. 204-181.00T.

Tetenborg, Konrad; and Huwelmann, Helmut, to Windmoller & Holscher. Apparatus for folding onto themselves the flattened filling apertures of large sacks and for closing same by closure strips. 4,258,524, Cl. 53-137.000.

Tetra Pak Developpement SA: *See*—
Ljungcrantz, Billy, 4,258,876, Cl. 229-43.000.

Tetra Pak International AB: *See*—
Dilot, Rolf M., 4,258,532, Cl. 53-538.000.

Texaco Development Corp.: *See*—
McEntire, Edward E., 4,259,259, Cl. 564-137.000.

Texas Instruments Incorporated: *See*—
Kuo, Chang-Kiang; and Tsaur, Shyh-Chang, 4,258,466, Cl. 29-571.000.

Textron Inc.: *See*—
MacFee, Norman W., 4,259,272, Cl. 264-23.000.

TFT, Ltd.: *See*—
Link, John A., 4,259,074, Cl. 433-214.000.

Th. Goldschmidt AG: *See*—
Wagner, Helmut, 4,259,191, Cl. 252-8.55D.

Thawley, Clive S.; Graham, Kenneth; and Brittain, Austin. Plate processing apparatus. 4,259,002, Cl. 354-319.000.

Thery, Georges. Method for feeding a combustion chamber of a two-stroke engine of the controlled ignition type and engine applying said method. 4,258,670, Cl. 123-73.00B.

Theurer, Josef; and Brunninger, Manfred, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile tie laying apparatus. 4,258,626, Cl. 104-6.000.

Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Ballast tamping. 4,258,627, Cl. 104-12.000.

Thibodeau, William E.: *See*—
Hulme, Joseph M.; and Thibodeau, William E., 4,258,564, Cl. 73-61.10C.

Thiebaut, Jean-Marie: *See*—
Roussy, Georges; Berteaud, Andre-Jean; and Thiebaut, Jean-Marie, 4,259,561, Cl. 219-10.55A.

Thiessen, Fritz: *See*—
Krabetz, Richard; Herrmann, Walter; Scholz, Norbert; Engelbach, Heinz; Engert, Gerd-Juergen; Willersinn, Carl-Heinz; Duembgen, Gerd; and Thiessen, Fritz, 4,259,211, Cl. 252-443.000.

Thir, Basil: *See*—
Newkirk, David D.; and Thir, Basil, 4,259,405, Cl. 428-395.000.

Thomas A. Short Co.: *See*—
Stevenson, Irving C., 4,258,903, Cl. 251-313.000.

Thomas & Betts Corporation: *See*—
Kuo, Ted L. C.; Piasecki, Raymond F.; and Grundfest, Michael A., 4,258,974, Cl. 339-97.00R.

Thompson, Charles M.; and Thompson, Charles T., to American Coldset Corporation. Core barrel for obtaining and retrieving subterranean formation samples. 4,258,803, Cl. 175-233.000.

Thompson, Charles T.: *See*—
Thompson, Charles M.; and Thompson, Charles T., 4,258,803, Cl. 175-233.000.

Thompson, Christopher J. Movable collimator for positron annihilation imaging device. 4,259,578, Cl. 250-363.00S.

Thompson, Donald C.; Cross, Richard L.; and Rose, Jimmie. Handle attachment for bowling ball. 4,258,947, Cl. 294-15.000.

Thompson, John H.: *See*—
Anderson, Phillip R.; Douglas, George R.; and Thompson, John H., 4,259,732, Cl. 367-13.000.

Thompson, Neil E. S.: *See*—
Naiman, Michael I.; Knepper, J. Irvine; and Thompson, Neil E. S., 4,259,087, Cl. 44-62.000.

Thomson-CSF: *See*—
Buchy, Francois; and Cadier, Jacques, 4,258,569, Cl. 73-343.00R.
Eranian, Armand; Dubois, Jean-Claude; Gazard, Maryse; and Barre, Francoise, 4,259,162, Cl. 204-159.160.

Thomson, Lois J.: *See*—
Babb, Raymond E., 4,259,020, Cl. 356-402.000.

Thorp, James T., to East Moline Metal Products Company. Automatically resetting safety brake. 4,258,832, Cl. 188-184.000.

Thorsheim, Ivar. Liquid dispenser. 4,258,862, Cl. 222-56.000.

Thurston, Jay D.; and Spector, George. Shoelace holder. 4,258,456, Cl. 24-117.000.

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Flockenhaus, Claus; and Hackler, Erich, 4,259,312, Cl. 423-659.000.

Tiefenthal, Alfred: *See*—
Vahl, Joachim; and Tiefenthal, Alfred, 4,258,865, Cl. 222-213.000.

Tiemann, Jerome J., to General Electric Company. Charge transfer signal processing apparatus filter. 4,259,596, Cl. 307-221.00D.

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Goettert, Edward J.; and Tiers, George V. D., 4,258,644, Cl. 118-31.500.

Tift, Leo R.: *See*—
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Tiitola, Antti-Jussi, to Karhu-Titan Oy. Method and apparatus for making a laminated ski. 4,259,274, Cl. 264-46.500.

Tilly, Michele M.: *See*—
Fruitstone, Mitchell J.; Tilly, Michele M.; and Pixton, Betty G., 4,259,207, Cl. 252-408.000.

Timmerman, Daniel M.: *See*—
Gilliams, Yvan K.; De Winter, Walter F.; and Timmerman, Daniel M., 4,259,429, Cl. 430-124.000.

Tirtiaux, Robert; and Laurent, Robert M., to Exxon Research & Engineering Co. Overbased sulphonates. 4,259,193, Cl. 252-33.000.

Tischer, Werner: *See*—
Liebert, Karl-Heinz; and Tischer, Werner, 4,258,752, Cl. 137-625.210.
Liebert, Karl-Heinz; and Tischer, Werner, 4,258,902, Cl. 251-214.000.

Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Matsushima, Yoshihisa; Sakakibara, Tadamori; Kaneko, Katsumi; Wada, Shozo; Ishii, Yoshio; Nagashima, Yukio; and Okamoto, Nobukazu, 4,259,530, Cl. 568-454.000.

Tobe, Hideharu, to Heiko Seisakusho, Ltd. Saving apparatus for program sheet in automatic control system of flat knitting machine. 4,258,558, Cl. 66-237.000.

Todd, Alec: *See—*
Ross, William J.; Todd, Alec; and Verge, John P., 4,259,343, Cl. 424-272.000.
Todd, Robert, to Burroughs Corporation. Apparatus and method for recognizing a pattern. 4,259,661, Cl. 340-146.3AQ.
Togulev, Alexandr K.: *See—*
Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladimir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K., 4,259,658, Cl. 340-26.000.
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Yamagata, Ryutaro; Matsuo, Sohei; Koyama, Shigeo; Kozuka, Nobuhiko; Tohi, Yasusuke; and Aizawa, Tatsuo, 4,259,008, Cl. 355-29.000.
Toho Beslon Co., Ltd.: *See—*
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Tokico Ltd.: *See—*
Aono, Masami, 4,258,614, Cl. 92-85.00R.
Tokuhara, Mitsuhiro; Sueda, Tetsuo; Tanaka, Kazuo; and Hirose, Ryusho, to Canon Kabushiki Kaisha. TV camera. 4,259,688, Cl. 358-107.000.
Tokushige, Kazuo, to Nippon Electric Co., Ltd. Dynamic memory. 4,259,729, Cl. 365-149.000.
Tokutomi, Seijiro; Ogawa, Ryota; Ohishi, Michiro; Nakamura, Kazuo; Jyojiki, Masao; and Tachihara, Satoru, to Asahi Kogaku Kogyo Kabushiki Kaisha. Focus detecting device. 4,258,989, Cl. 354-25.000.
Tokyo Koso Kabushiki Kaisha: *See—*
Zinnai, Sadazi; and Okayasu, Takeshi, 4,258,901, Cl. 251-173.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Kurosawa, Ryoichi, 4,259,629, Cl. 318-807.000.
Nakamura, Norimitsu, 4,259,717, Cl. 364-200.000.
Suzuki, Yasoji; and Iida, Tetsuya, 4,259,686, Cl. 307-262.000.
Takada, Shigeho, 4,259,599, Cl. 307-255.000.
Takahashi, Shigeru; Ohshima, Iwao; Honda, Masaki; and Yamashita, Mizuho, 4,259,666, Cl. 340-647.000.
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Ichinose, Noboru; Okuma, Hideo; Yokomizo, Yuji; Takahashi, Takashi; Nishihara, Mieko; and Katsura, Masaki, 4,259,292, Cl. 422-98.000.
Tolley, Michael L. Supporting material for copying. 4,258,893, Cl. 248-441.00B.
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Nikitin, Jury E.; Murinov, Jury I.; Leplyanin, Gennady V.; Rafikov, Sagid R.; Bikchurina, Lilia K.; Tolstikov, Genrikh A.; Kazakov, Valery P.; Battalov, Edvard M.; Kolosnitsyn, Vladimir S.; Golodkova, Lyalya N.; Izmailov, Genrikh I.; and Markin, Gennady K., 4,259,229, Cl. 260-42.210.
Tomcufcik, Andrew S.; and Wilkinson, Raymond G., to American Cyanamid Company. 2-(Substitutedamin)benz[cd]indoles. 4,259,490, Cl. 544-369.000.
Tomiita, Kazuo: *See—*
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Tominaga, Kiyonori: *See—*
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Tominaga, Shinji, to Minolta Camera Kabushiki Kaisha. Power source voltage checking circuit. 4,258,999, Cl. 354-268.000.
Tomita, Mikio; and Ueno, Athumi, to Meisei Chemical Works, Ltd. Flame retardant treatment for polyester products. 4,259,396, Cl. 428-265.000.
Tomlinson, Richard W., to Uniroyal, Inc. Cured fibers coated with adhesion promoting additives for ethylene-propylene-nonconjugated diene elastomers. 4,259,403, Cl. 428-378.000.
Tomomoto, Takanori; Suzuki, Kihachi; Oda, Shin-ichi; and Okuno, Toshimitsu, to Nitto Electric Industrial Co., Ltd. One-part curable elastic sealant. 4,259,231, Cl. 260-42.520.
Tomy Kogyo Co., Inc.: *See—*
Nishimiya, Toru, 4,258,918, Cl. 273-110.000.
Topness, Paul C.: *See—*
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Toray Industries, Inc.: *See—*
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Toshiba Photo Products Co., Ltd.: *See—*
Kuraishi, Kaoru, 4,258,991, Cl. 354-32.000.
Toyo Boseki Kabushiki Kaisha: *See—*
Matsuo, Tatsuki; Ishizaki, Nobuo; and Suzuki, Yoichi, 4,259,092, Cl. 55-78.000.
Toyo Contact Lens Co., Ltd.: *See—*
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Toyosha Co., Ltd.: *See—*
Uzu, Hideo, 4,258,818, Cl. 180-233.000.
Toyoshima, Takefumi: *See—*
Miura, Tatsuhiko; Toyoshima, Takefumi; Kikuchi, Kazuo; and Masaki, Akio, 4,258,820, Cl. 180-295.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Tooru; and Ueno, Yoshiki, 4,258,683, Cl. 123-416.000.
Morino, Hideki, 4,258,587, Cl. 74-700.000.
Nakamura, Norihiko, 4,259,266, Cl. 261-44.00C.
Noguchi, Masaaki; Tanaka, Yukiyasu; and Igarashi, Isao, 4,258,669, Cl. 123-51.0BA.
Numazawa, Akio; Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,258,586, Cl. 74-695.000.
Takizawa, Masaaki; Takahashi, Kazuo; and Matsubara, Noboru, 4,258,671, Cl. 123-90.160.
Tracy, David J.: *See—*
Chakrabarti, Paritosh M.; Wood, Lindley S.; and Tracy, David J., 4,259,474, Cl. 528-388.000.
Traill, Philip J.; and Nall, Joe H. Single-paper vending apparatus. 4,258,861, Cl. 221-213.000.
Trame, Charles E., to Everbrite Electric Company. Price display board with tape pressing and locking means. 4,258,490, Cl. 40-518.000.
Trenkle, Robert W.: *See—*
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,258,727, Cl. 131-9.000.
Trio Kabushiki Kaisha: *See—*
Iimura, Takashi, 4,259,644, Cl. 331-2.000.
Triplett, William R. Electrical continuity and voltage testing device having a pair of probes spaced for insertion into an electrical socket. 4,259,635, Cl. 324-149.000.
Trobaugh, Arnold G., to Johnson Controls, Inc. Flow system with pressure level interlock control apparatus. 4,258,747, Cl. 137-488.000.
Trotter, Jimmy R.; McConnell, Richard L.; and Joyner, Frederick B., to Eastman Kodak Company. Propylene/1-butene or 1-pentene/-higher 1-olefin copolymers useful as pressure-sensitive hot-melt adhesives. 4,259,470, Cl. 526-348.200.
Trummlitz, Gunter: *See—*
Engel, Wolfhard; Trummlitz, Gunter; Seeger, Ernst; Haarmann, Walter; Engelhardt, Gunther; and Zimmermann, Rainer, 4,259,336, Cl. 424-246.000.
Trutzschler GmbH & Co. KG: *See—*
Jagst, Peter, 4,258,453, Cl. 19-98.000.
TRW Inc.: *See—*
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Trybulski, Eugene J.: *See—*
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,259,503, Cl. 548-255.000.
Tsai, Thomas Y. R.: *See—*
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Tsaoussis, Peter W.: *See—*
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Tsaur, Shyh-Chang: *See—*
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Tsuge, Noboru; Kuwakado, Satosi; Takei, Toshihiro; and Shimokawa, Toshiaki, to Nippon Soken, Inc. Seat belt tensioning device. 4,258,934, Cl. 280-806.000.
Tsujimoto, Susumu; Yamazaki, Hayao; Ozaki, Masayoshi; Kobayashi, Takehiro; Fujino, Toru; Yasuda, Mitsuo; Minami, Katsuji; and Itogawa, Zirou, to Sharp Kabushiki Kaisha. Hair waving appliance controlled by a microcomputer. 4,258,731, Cl. 132-9.000.
Tsukamoto, Kenkichi, to Seiko Tsukamoto. Electrostatic and magnetic tobacco smoke filtering arrangement. 4,258,730, Cl. 131-170.00R.
Tsukuda, Yasuo; Imoto, Katsuyuki; Susa, Kenzo; Matsuyama, Iwao; and Suganuma, Tsuneo, to Hitachi, Ltd. Method for producing optical fiber preform. 4,259,101, Cl. 65-18.000.
Tsuneda, Terukuni, to Canon Kabushiki Kaisha. Liquid developer for electrostatic latent image. 4,259,428, Cl. 430-115.000.
Tsutsui, Nobukazu: *See—*
Suzuki, Tameyuki; Shirakashi, Yoshio; Tsu'sui, Nobukazu; Yamamoto, Sadao; Kubo, Akira; Teshima, Yasuhiko; and Kuranami, Nobuo, 4,259,163, Cl. 204-181.00T.
Tsuzuki, Akira: *See—*
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Tuchiya, Yoshimasa: *See—*
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Tucker, Elton M.; and Prosl, Frank R., to Metal Bellows Corporation. Infusion apparatus and method. 4,258,711, Cl. 128-207.190.
Tullos, Homan C.; and Woods, Dewey W. Downhole drilling system. 4,258,802, Cl. 175-103.000.
Turner, John H. W.; and Shackleton, Charles E. E., to Mineral Process Licensing Corp. B.V. Recovery of chlorine values from iron chloride by-product in chlorination of aluminous materials. 4,259,298, Cl. 423-135.000.
Tuzzolino, Carmen J. Plaster surface finishing device. 4,258,898, Cl. 249-119.000.
Tymkewicz, John. Thermocouple probe-construction and mounting. 4,259,123, Cl. 136-221.000.
Tyrolit Schleifmittelwerke Swarovski K.G.: *See—*
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U-S Safety Trolley Corporation: *See—*
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Uba, Toshio; and Juergens, Tristan D., to Gates Rubber Company, The. Vibratory welding of battery components. 4,259,419, Cl. 429-174.000.
Uchiyama, Masami; Fuzimori, Toru; and Mori, Toshio, to Sony Corporation. Electric motor. 4,259,603, Cl. 310-68.00B.

Uchiyama, Yuichi: *See*—
Niino, Tuyoshi; and Uchiyama, Yuichi, 4,259,154, Cl. 176-38.000.
Ueda, Tetsuo; Ohta, Masuo; and Sugano, Seiroku, to Director-General of the Agency of Industrial Science and Technology. Process for the production of olefins. 4,259,177, Cl. 208-127.000.
Ueno, Athumi: *See*—
Tomita, Mikio; and Ueno, Athumi, 4,259,396, Cl. 428-265.000.
Ueno, Yoshiki: *See*—
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Tooru; and Ueno, Yoshiki, 4,258,683, Cl. 123-416.000.
Uenoyama, Iwao: *See*—
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Uesugi, Kyozo; and Tanaka, Osamu, to Minolta Camera Kabushiki Kaisha. Diaphragm control mechanism for camera objectives. 4,258,996, Cl. 354-196.000.
Uetake, Shigeru: *See*—
Ohmuro, Yuzo; Kamogawa, Nin-ichi; Uetake, Shigeru; and Yamazaki, Yoshio, 4,259,427, Cl. 430-107.000.
Ujiie, Takashi: *See*—
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Ullman, Myron E., Jr., to M.M.G., Inc. Method of forming fastening system. 4,258,464, Cl. 29-526.00R.
Ultra Carbon Corporation: *See*—
Flegel, Vernon; and Anthony, Robert J., 4,259,278, Cl. 264-81.000.
Umehara, Akira: *See*—
Kondoh, Syunichi; Matsufuji, Akihiro; Ohara, Yuji; and Umehara, Akira, 4,259,432, Cl. 430-281.000.
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Umezawa, Hamao; Takeuchi, Tomio; Ishizuka, Masaaki; Watanabe, Kiyoshi; Yamashita, Toshiaki; Naoi, Noriyuki; and Hidaka, Takayoshi, to Kanegafuchi Chemical Industry Company, Limited; and Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Antibiotic auromomycin, and process for production thereof. 4,259,319, Cl. 424-117.000.
Union Carbide Corporation: *See*—
Robeson, Lloyd M., 4,259,458, Cl. 525-68.000.
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Mirtain, Henri J.; and Vervin, Jacques, 4,258,774, Cl. 152-361.0FP.
Uniroyal, Inc.: *See*—
Heck, Rhomie L., III, 4,259,453, Cl. 521-85.000.
Snyder, Robert H., 4,258,771, Cl. 152-330.0RF.
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United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Dean, Douglas J.; Linford, Patrick F. T.; and Savage, John, 4,259,684, Cl. 357-74.000.
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Jezek, Bruce W.; and McClung, Glen L., 4,258,462, Cl. 29-428.000
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Sze, Robert C.; and Scott, Peter B., 4,259,646, Cl. 331-94.50G.
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Jakosky, John J., Jr.; and Jakosky, John J., 4,259,577, Cl. 250-358.00R.
Jernigan, James L., 4,259,009, Cl. 356-1.000.
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Junod, Michael T.; and Bates, Albert M., 4,259,744, Cl. 455-103.000.
Keller, Teddy M.; and Griffith, James R., 4,259,471, Cl. 528-9.000.
Killian, Jimmie W., 4,259,630, Cl. 318-807.000.
Sawn, George W., 4,258,888, Cl. 244-17.170.
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Broer, Dirk J.; and van den Broek, Arnoldus J. M., 4,259,435, Cl. 430-313.000.
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Katz, Murray; Gruver, Gary A.; and Kunz, H. Russell, 4,259,302, Cl. 423-237.000.
Streib, Richard A., 4,258,822, Cl. 181-213.000.
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University of Leeds Industrial Services Ltd.: *See*—
Wilson, Ian B.; and Oxenham, William, 4,258,454, Cl. 19-105.000.
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Bundy, Gordon L., 4,259,250, Cl. 260-408.000.
Bundy, Gordon L., 4,259,535, Cl. 568-838.000.
Johnson, Roy A., 4,259,479, Cl. 542-426.000.
Johnson, Roy A., 4,259,480, Cl. 542-426.000.
Johnson, Roy A., 4,259,481, Cl. 542-426.000.
Potts, Alan W., 4,258,845, Cl. 206-221.000.
Sih, John C., 4,259,245, Cl. 260-346.220.
Sih, John C., 4,259,513, Cl. 560-121.000.
Sih, John C., 4,259,514, Cl. 560-121.000.
Sih, John C., 4,259,515, Cl. 560-121.000.
Sih, John C., 4,259,516, Cl. 560-121.000.
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Sih, John C., 4,259,528, Cl. 568-379.000.
Sih, John C., 4,259,529, Cl. 568-379.000.
Upton, Albert E.; Upton, Barney G.; and Craig, Jack S., to Upton, Albert E. Roller bar construction. 4,258,778, Cl. 160-383.000.
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Upton, Thomas E., to Dresser Industries, Inc. High temperature well packer. 4,258,926, Cl. 277-116.400.
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Morris, Roy; and Pickering, Terence J., 4,259,591, Cl. 250-560.000.
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Uzu, Hideo, to Toyosha Co., Ltd. Four-wheel drive tractor. 4,258,818, Cl. 180-233.000.
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Kemper, Yves J.; and Pouliot, Harvey N., 4,258,581, Cl. 74-192.000.
Vagin, Alexei A.; Kornev, Oleg J.; and Bednyakov, Alexandr I. Apparatus for obtaining granules from melts. 4,259,046, Cl. 425-8.000.
Vagin, Viktor V.: *See*—
Spirin, Evgeny T.; Shakhov, Vladimir V.; Vagin, Viktor V.; Vainzof, Kaletta M.; and Bogushev, Zimel A., 4,259,063, Cl. 432-124.000.

Vahl, Joachim; and Tiefenthal, Alfred. Dispenser for liquid or pasty substances such as liquid soap and the like. 4,258,865, Cl. 222-213.000.
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van Gils, Gerard E., to General Tire & Rubber Company, The. Composite of polyamide bonded to rubber and method for making the same. 4,259,404, Cl. 428-395.000.
van Gorkom, Gerardus G. P.; and Hoeberechts, Arthur M. E., to U.S. Philips Corporation. Semiconductor device and method of manufacturing same, as well as a pick-up device and a display device having such a semiconductor device. 4,259,678, Cl. 357-13.000.
Van Kranenburg, Simon, to Internationale Octrooi Maatschappij "Octropa" B.V. Stabilized milkproteins-containing compositions. 4,259,357, Cl. 426-42.000.
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van Raalte, John A., to RCA Corporation. Segmented shadow mask. 4,259,611, Cl. 33-422.000.
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Vaseen, Vesper A. Solar or waste heat-exothermic/endothermic liquid-heat sink and pump. 4,258,700, Cl. 126-433.000.
Vassiliou, Eustathios, to Du Pont de Nemours, E. I., and Company. Decorative process. 4,259,375, Cl. 427-267.000.
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Vela, Charles C. Machine and method for stapling door fames. 4,258,873, Cl. 227-4.000.
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Venetucci, Jim M.; and Orfe, John C., to Liquid Carbonic Corporation. Deoxygenation of liquids. 4,259,360, Cl. 426-231.000.
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Vig, John R., to United States of America, Army. Fast warm-up oven controlled piezoelectric oscillator. 4,259,606, Cl. 310-343.000.
Vilkomerson, David H. R.; and Mezrich, Reuben S., to RCA Corporation. Pulse-echo ultrasonic wave-energy imaging system incorporating high-velocity oscillated transducer. 4,258,576, Cl. 73-633.000.
Vinals, Joaquin F.: *See*—
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Vine, Raymond W.; and Narsavage, Stephen T., to United Technologies Corporation. High pressure-low porosity wet seal. 4,259,389, Cl. 428-192.000.
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Vodicka, Vincent, to General Electric Company. Sealed, prefocused mount for plastic PAR lamp. 4,259,712, Cl. 362-310.000.
Voeste, Theodor; Schmidt, Hans J.; and Marschner, Friedemann, to Metallgesellschaft Aktiengesellschaft. Continuous process of producing fatty alcohols. 4,259,536, Cl. 568-885.000.
Vogler, Gerd, to U.S. Philips Corporation. Control circuit for a rotary-anode X-ray tube. 4,259,580, Cl. 250-402.000.
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Vogt, Peter; and Hoh, Rainer, to Fichtel & Sachs AG. Fluid line connection device. 4,258,943, Cl. 285-340.000.
Volkmann, Klaus, to Felten & Guilleaume Carlswerk AG. Method and arrangement for measuring the attenuation-versus-frequency characteristics of two-ports. 4,259,631, Cl. 324-57.0SS.
Volksen, Willi: *See*—
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Volz, Werner; Russeler, Friedrich; Ritter, Ernst; and Schwartz, Reinhard, to Robert Bosch GmbH. Regulator apparatus such as a centrifugal governor for internal combustion engines. 4,258,675, Cl. 123-374.000.
von der Crone, Jost, to Ciba-Geigy Corporation. Bis-isoindoline pigments. 4,259,488, Cl. 544-296.000.
von Praun, Ferdinand: *See*—
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Vorbeck, Donald W.: *See*—
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Votta, Gerald A.: *See*—
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Vuille, Pierre-Alain, to ETA A.G. Ebauches-Fabrik. Timepiece movement with differential gear mechanism. 4,259,735, Cl. 368-34.000.
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Yamauchi, Junichi; Masuhara, Eiichi; Nakabayashi, Nobuo; Shibatani, Kyoichiro; and Wada, Tooru, 4,259,117, Cl. 106-35.000.
Wagner Electric Corporation: *See*—
DuBois, Richard, 4,259,613, Cl. 313-497.000.
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Wagstaffe, Eric C., to Reed International Limited. Flexible wallcoverings. 4,259,386, Cl. 428-159.000.
Wahli, Christian, to Societe d'Assistance Technique pour Produits Nestle S.A. Apparatus for agglomerating powder-form material. 4,259,053, Cl. 425-222.000.
Waizer, Walter; and Helletsberger, Harald, to Tyrolit Schleifmittelwerke Swarovski K.G. Grinding wheel containing grain-coated reinforcement fibers and method of making it. 4,259,089, Cl. 51-295.000.
Wakabayashi, Shinichi: *See*—
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Wakamiya, Masatoshi, to Bridgestone Tire Company Limited. Marine fender. 4,258,641, Cl. 114-219.000.
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Walker, Francis H., to Stauffer Chemical Company. Bis-substituted succinamides and their utility as herbicides. 4,259,484, Cl. 544-87.000.
Wall, Bill R., to Power Controls Corporation. Three-way light dimmer switch. 4,259,619, Cl. 315-361.000.
Wallace, Edward M.; Gosselin, Robert G.; and Labarre, Ernest D., to Wallace Mfg. Corp. Shear. 4,258,472, Cl. 30-262.000.
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Wallgren, Kurt; and Nilsson, Tage, to Mjolkcentralen Arla Ekonomisk Forening. Method for the production of protein concentrate. 4,259,356, Cl. 426-42.000.
Walser, Armin, to Hoffmann-La Roche Inc. Process for the preparation of imidazobenzodiazepines. 4,259,241, Cl. 260-243.300.
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Walters, Noel E.; Markey, William F.; and Garman, Duane F., to Goodyear Tire & Rubber Company, The. Retreaded tire, method and apparatus. 4,258,776, Cl. 152-361.00R.
Wang, Kenneth K. Aeration apparatus by means of vortex action. 4,259,267, Cl. 261-93.000.
Ward, John K.: *See*—
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Ward, Kent G. McB.; and Smith, Francis L. Bale handling apparatus. 4,259,034, Cl. 414-24.600.
Warden, Fuller; and Lewis, Eugene W. Dental polishing cup for use with a rotary dental hand piece. 4,259,071, Cl. 433-166.000.
Wardlaw, Stephen C. Automatic disposable hypodermic syringe. 4,258,713, Cl. 128-218.00F.
Wardlaw, Stephen C. Blood count reader. 4,259,012, Cl. 356-39.000.
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Watanabe, Masanori; Nakagawa, Tadashi; Nemoto, Ichiro; Onda, Eiichi; and Koyama, Mitsuo, to Seiko Koki Kabushiki Kaisha. Actuating lever stopping device of a camera shutter mechanism. 4,259,001, Cl. 354-266.000.
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Watanabe, Tadahiko; and Shimizu, Hiroki, to Director-General of the Agency of Industrial Science and Technology. Boride-based refractory materials. 4,259,119, Cl. 106-55.000.
Waugh, Charles J. Grape stake. 4,258,523, Cl. 52-732.000.
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Webb, Terence C., to Ciba-Geigy AG. Development inhibitor releasing compounds and their use in photographic materials. 4,259,437, Cl. 430-382.000.
Weber, Donald D., to Clark Equipment Company. Brake mechanism for a hand operated lift truck. 4,258,831, Cl. 188-119.000.
Weber, Harold J. Information interchange between an intelligent operator, indicia bearing documents, and responsive apparatus. 4,259,667, Cl. 340-707.000.
Weber, Heinrich; Lorenz, Kurt; Dungs, Horst; Kurtz, Roman; and Kersting, Hans-Joachim, to Carl Still GmbH & Co. KG, Firma; and Rheinische Braunkohlenwerke AG. Apparatus for producing abrasion resistant coke from brown coal briquets. 4,259,158, Cl. 202-121.000.
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Wee, Maria Luz S.; Gilbert, Lawrence A.; and Mathew, Jacob, to Procter & Gamble Company, The. Alkaline dishwasher detergent. 4,259,199, Cl. 252-99.000.
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Weiler, Fritz. High voltage power transformer winding temperature control system. 4,258,570, Cl. 73-350.000.
Weiler, Gerhard H.; and Nagel, Dieter H., to Automatic Liquid Packaging, Inc. Hermetically sealed container with twistable overcap. 4,258,867, Cl. 222-507.000.
Wein, Istvan: *See*—
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Weiss, Hermann; and Stockhammer, Ernst, to Atec-Weiss KG; and Vereinigte Osterreichische Eisen- und Stahlwerke Alpin Montang Aktiengesellschaft. Drive mechanism for rotary drum. 4,258,583, Cl. 74-414.000.
Welch, Henry H. Automatic multichannel apparatus for performing analyses on fluids, in particular for performing clinical-chemistry analyses on biological liquids. 4,259,288, Cl. 422-63.000.
Welch, Herbert E., to Shenton, Frederick A. Socket wrench with auxiliary drive. 4,258,594, Cl. 81-57.290.
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Wendel, Ion L. Split slip nut and seal assembly for plumbing trap. 4,258,944, Cl. 285-342.000.
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Werner, Edward E., to Kimberly-Clark Corporation. Method for classifying fibers. 4,258,455, Cl. 19-303.000.

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Westphal, Teddy M., to Boise Cascade Corporation. No-fin scored metal ends for containers. 4,258,859, Cl. 220-270.000.
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Wheeler, Francis J. Liquid level controller. 4,258,737, Cl. 137-15.000.
Wheeler, William J., to Eli Lilly and Company. Crystallization process. 4,259,485, Cl. 544-90.000.
White, Thomas M., to Carrier Corporation. Damper blade control. 4,258,877, Cl. 236-49.000.
Whitehurst, Marshal L., to RCA Corporation. Shield for plating substrate. 4,259,166, Cl. 204-279.000.
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Wier, John P.; and Garrett, Robert A., to United States of America, Navy. Ambulator drive mechanism. 4,258,815, Cl. 180-6.480.
Wiesler, Mordechai, to Teledyne, Inc. Precision positioning device. 4,258,928, Cl. 279-1.00L.
Wiesner, Karel; and Tsai, Thomas Y. R., to Advance Biofactures Corporation. Synthesis of furyl intermediates, and cardenolides and their isomers prepared therefrom. 4,259,240, Cl. 260-239.55R.
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Tomcufcik, Andrew S.; and Wilkinson, Raymond G., 4,259,490, Cl. 544-369.000.
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Cole, William L.; Stott, Geoffrey; and Bowden, Humphrey G., 4,259,126, Cl. 148-12.00E.
Willersinn, Carl-Heinz: *See—*
Krabetz, Richard; Herrmann, Walter; Scholz, Norbert; Engelbach, Heinz; Engert, Gerd-Juergen; Willersinn, Carl-Heinz; Duembgen, Gerd; and Thiessen, Fritz, 4,259,211, Cl. 252-443.000.
Williams, Harry G. Sign holder for vehicle. 4,258,492, Cl. 40-593.000.
Williams, Richard, to RCA Corporation. Non-air polluting, non-pyrolytic upgrading of coal for cleaner and more effective electrical power generation. 4,259,414, Cl. 429-17.000.
Williamson, Ernest W., to Stoker, Arlon L., a part interest. Fireplace heating system with finned tubes or fireplace grate. 4,258,880, Cl. 237-56.000.
Willich, Rolf, to Wilhelm Fette GmbH. Tabletting machine. 4,259,049, Cl. 425-73.000.
Wilson, David S.: *See—*
Kelly, James B.; and Wilson, David S., 4,258,553, Cl. 62-117.000.
Wilson, Ian B.; and Oxenham, William, to University of Leeds Industrial Services Ltd. Apparatus for feeding fibres to a carding machine. 4,258,454, Cl. 19-105.000.
Wilson, John C.; and Yacobucci, Paul D., to Eastman Kodak Company. Polymer of N-(acryloyloxyaryl) sulfonamides. 4,259,469, Cl. 526-288.000.
Wilson, Leroy. Screw. 4,258,606, Cl. 411-406.000.
Wilson, Wallace; and Egenski, Frank J., to RCA Corporation. Free hold down of wafers for material removal. 4,258,508, Cl. 51-283.00R.
Winderl, Siegfried: *See—*
Huchler, Otto H.; Mesch, Walter; Winderl, Siegfried; Mueller, Herbert; and Hoffmann, Herwig, 4,259,531, Cl. 568-617.000.
Windhager, Robert H.; and Hwang, Mei H., to Calgon Corporation. Electroconductive coating formulations. 4,259,411, Cl. 428-511.000.
Windmoller & Holscher: *See—*
Tetenborg, Konrad; and Huwelmann, Helmut, 4,258,524, Cl. 53-137.000.
Winger, James W.: *See—*
Brandon, Ronald E.; and Winger, James W., 4,258,929, Cl. 280-154.50R.
Winter, Heinrich; and Merz, Dietrich, to Battelle-Institut e.V. Apparatus and method for the manufacture of splat foils from metallic melts. 4,259,270, Cl. 264-8.000.
Winter, William E.: *See—*
Gladrow, Elroy M.; Winter, William E.; and Schuette, William L., 4,259,212, Cl. 252-455.00Z.
Wisconsin Gas Company: *See—*
Wunderlin, James F., 4,259,080, Cl. 23-232.00R.
Wiser, J. Gordon: *See—*
Lundahl, Ezra C.; and Wiser, J. Gordon, 4,258,886, Cl. 241-101.700.
Witte, Alexander: *See—*
Eckert, Konrad; Espenschied, Helmut; Rothfuss, Georg; and Witte, Alexander, 4,258,591, Cl. 74-866.000.
Witte, Walter R., to RCA Corporation. Method of making transformer. 4,258,467, Cl. 29-605.000.
Wolf, Theo: *See—*
Gause, Dieter; Wolf, Theo; and Fell, Wolfgang, 4,259,700, Cl. 360-95.000.
Wolff, George D. Engine fuel injection system. 4,258,674, Cl. 123-446.000.
Wolff, Per: *See—*
Sorensen, Erik L.; Wolff, Per; and Larsen, Hans-Ole, 4,258,705, Cl. 128-1.00R.
Wommack, Joel B., Jr.: *See—*
Adams, John B., Jr.; and Wommack, Joel B., Jr., 4,259,532, Cl. 568-649.000.
Wood, Lindley S.: *See—*
Chakrabarti, Paritosh M.; Wood, Lindley S.; and Tracy, David J., 4,259,474, Cl. 528-388.000.
Woods, Dewey W.: *See—*
Tullos, Homan C.; and Woods, Dewey W., 4,258,802, Cl. 175-103.000.
Worst, Joseph C. Golf ball. 4,258,921, Cl. 273-232.000.
Wray, Daniel J.; and Regnier, Alexis G., to Standard Abrasives, Inc. Flap-type rotary abrasive device. 4,258,509, Cl. 51-334.000.
Wright, Thomas E. Bottle fitment. 4,258,854, Cl. 215-21.000.
Wu, Yao H.; and Lobeck, Walter G., Jr., to Mead Johnson & Company. N-Phenyl amidines. 4,259,238, Cl. 260-239.0BE.
Wuerzer, Bruno: *See—*
Platz, Rolf; Fuchs, Werner; Rieber, Norbert; Jung, Johann; and Wuerzer, Bruno, 4,259,235, Cl. 260-152.000.
Wunderlich, Klaus: *See—*
Hohmann, Walter; and Wunderlich, Klaus, 4,259,248, Cl. 260-369.000.
Wunderlin, James F., to Wisconsin Gas Company. Method of determining discontinuities in the heat exchanger of a warm air furnace. 4,259,080, Cl. 23-232.00R.
Wunsch, Horst: *See—*
Fricker, Peter; Leyendecker, Kuno; Scharl, Jurgen; Wagner, Helmut; Wunsch, Horst; and Scholz, Manfred, 4,258,521, Cl. 52-406.000.
Wurfel, Peter: *See—*
Ruppel, Wolfgang; Hetzler, Ullrich; Vogt, Horst; and Wurfel, Peter, 4,259,365, Cl. 427-46.000.
Wymer, Arthur C.: *See—*
Monahan, John F.; Smiley, Charles F.; and Wymer, Arthur C., 4,259,691, Cl. 358-219.000.
Wymer, Carl G., to Med General, Inc. Vesseloop dispensing package. 4,258,843, Cl. 206-63.300.
Wynne, Francis E., Jr.; Lopez, Jaime; and Zaborowsky, Edward J., to United States of America, Energy. Coke from coal and petroleum. 4,259,178, Cl. 208-131.000.
Wynne, Ralph A.: *See—*
Louthan, Jean H.; and Wynne, Ralph A., 4,258,742, Cl. 137-318.000.
Xercavins, M. Pierre, to Freyssinet International. Possibly removable device for guiding the deflection of stretched cables. 4,258,518, Cl. 52-223.00L.
Xerox Corporation: *See—*
Leising, Walter F.; and Rasch, Kenneth R., 4,258,648, Cl. 118-60.000.
Liao, Henry H., 4,259,694, Cl. 358-283.000.
Yacobucci, Paul D.: *See—*
Wilson, John C.; and Yacobucci, Paul D., 4,259,469, Cl. 526-288.000.
Yagi, Seiichi, to Minigrip, Inc. Method and apparatus for making profile sheets. 4,259,133, Cl. 156-244.110.
Yagura, Kazuo: *See—*
Yukuta, Toshio; Yagura, Kazuo; and Fuchigami, Nobuhisa, 4,259,452, Cl. 521-52.000.
Yahner, Joseph A.: *See—*
Beck, James R.; and Yahner, Joseph A., 4,259,347, Cl. 424-304.000.

Yamada, Hisashi; Hayakawa, Kazuo; and Makise, Masayuki, to Lion Fat & Oil Co., Ltd., The. Odorless polyolefin resin compositions. 4,259,456, Cl. 525-3.000.
Yamada, Koji: *See*—
Shiga, Akinobu; Kakugo, Masahiro; Fukui, Yoshiharu; Yamada, Koji; Sadatoshi, Hajime; Wakamatsu, Kazuki; and Yoshioka, Hiroshi, 4,259,461, Cl. 525-247.000.
Yamada, Osamu: *See*—
Takahashi, Tatsuo; and Yamada, Osamu, 4,259,587, Cl. 250-486.000.
Yamada, Shozo: *See*—
Maeda, Kuniyasu; Kaeriyama, Minoru; Matsui, Nobuo; Ishikawa, Hisao; Yamada, Shozo; and Okunuki, Susumu, 4,259,105, Cl. 71-108.000.
Yamagata, Ryutaro; Matsuo, Sohei; Koyama, Shigeo; Kozuka, Nobuhiko; Tohi, Yasusuke; and Aizawa, Tatsuo, to Mita Industrial Company, Ltd. Electrostatic copying apparatus. 4,259,008, Cl. 355-29.000.
Yamaguchi, Akia: *See*—
Soelberg, Kenneth B.; Stark, Marvin M.; and Yamaguchi, Akia, 4,259,070, Cl. 433-149.000.
Yamakawa, Yoshio: *See*—
Nakamura, Yasuhiko; and Yamakawa, Yoshio, 4,259,096, Cl. 55-316.000.
Yamamoto, Sadao: *See*—
Suzuki, Tameyuki; Shirakashi, Yoshio; Tsutsui, Nobukazu; Yamamoto, Sadao; Kubo, Akira; Teshima, Yasuhiko; and Kuranami, Nobuo, 4,259,163, Cl. 204-181.00T.
Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Gushima, Hiroshi; Watanabe, Shunichi; Saito, Takeshi; Sasaki, Toshio; Eiki, Hideo; Oka, Yoshihiko; and Osono, Takashi, 4,259,326, Cl. 424-246.000.
Yamashita, Mizuho: *See*—
Takahashi, Shigeru; Ohshima, Iwao; Honda, Masaki; and Yamashita, Mizuho, 4,259,666, Cl. 340-647.000.
Yamashita, Toshiaki: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Ishizuka, Masaaki; Watanabe, Kiyoshi; Yamashita, Toshiaki; Naoi, Noriyuki; and Hidaka, Takayoshi, 4,259,319, Cl. 424-117.000.
Yamasue, Kotaro; Takahashi, Hiroshi; Sakaki, Hirokazu; and Nishioka, Akira, to Fuji Photo Film Co., Ltd. Method for developing positive acting light-sensitive planographic printing plate. 4,259,434, Cl. 430-302.000.
Yamat, Miguel B., to Westinghouse Electric Corp. Current limiting circuit interrupter with improved operating mechanism. 4,259,651, Cl. 335-16.000.
Yamauchi, Junichi; Masuhara, Eiichi; Nakabayashi, Nobuo; Shibatani, Kyoichiro; and Wada, Tooru, to Kuraray Co., Ltd. Method of filling a tooth cavity. 4,259,075, Cl. 433-217.000.
Yamauchi, Junichi; Masuhara, Eiichi; Nakabayashi, Nobuo; Shibatani, Kyoichiro; and Wada, Tooru, to Kuraray Co., Ltd. Dental filling material. 4,259,117, Cl. 106-35.000.
Yamazaki, Hayao: *See*—
Tsujimoto, Susumu; Yamazaki, Hayao; Ozaki, Masayoshi; Kobayashi, Takehiro; Fujino, Toru; Yasuda, Mitsuo; Minami, Katsuji; and Itogawa, Zirou, 4,258,731, Cl. 132-9.000.
Yamazaki, Yoshio: *See*—
Ohmuro, Yuzo; Kamogawa, Nin-ichi; Uetake, Shigeru; and Yamazaki, Yoshio, 4,259,427, Cl. 430-107.000.
Yamazoe, Hisamitsu: *See*—
Fujisawa, Hideya; Omori, Norio; Yamazoe, Hisamitsu; and Yoshida, Matuju, 4,259,723, Cl. 364-431.000.
Matsuno, Isao; and Yamazoe, Hisamitsu, 4,258,686, Cl. 123-568.000.
Yanney, James F. M. Method and apparatus for connecting an artificial tooth portion to a dentin portion. 4,259,076, Cl. 433-225.000.
Yanshevsky, Vladimir A.: *See*—
Gurvich, Yakov A.; Kumok, Simona T.; Latysheva, Galina G.; Rybak, Anna I.; Styskin, Evgeny L.; Liakumovich, Alexandr G.; Michurov, Jury I.; Filipova, Rufina A.; Yanshevsky, Vladimir A.; Rutman, Grigory I.; and Logutov, Igor J., 4,259,534, Cl. 568-720.000.
Yasuda, Eturo; Segawa, Yoshihiro; and Ohta, Minoru, to Nippon Soken, Inc. Gas sensor. 4,258,563, Cl. 73-23.000.
Yasuda, Mitsuo: *See*—
Tsujimoto, Susumu; Yamazaki, Hayao; Ozaki, Masayoshi; Kobayashi, Takehiro; Fujino, Toru; Yasuda, Mitsuo; Minami, Katsuji; and Itogawa, Zirou, 4,258,731, Cl. 132-9.000.
Yasui, Seimei; Matsuda, Yoshinobu; Sagou, Masakazu; and Noguchi, Takanobu, to Sumitomo Chemical Company, Limited. Process for preparation of resin composition useful for laminated sheet. 4,259,395, Cl. 428-248.000.
Yasui, Tokumasa; Fukuda, Minoru; and Shirasu, Tatsumi, to Hitachi, Ltd. Method for fabrication of offset gate MIS device. 4,258,465, Cl. 29-571.000.
Yasutake, Tatsuo: *See*—
Kajiura, Hirokazu; Murata, Kazuhiko; Oda, Hidekuni; and Yasutake, Tatsuo, 4,259,468, Cl. 526-283.000.
Yokogawa Electric Works, Ltd.: *See*—
Sawayama, Takehiro; Ito, Ichizo; Aga, Toshio; and Ando, Tetsuo, 4,258,565, Cl. 73-141.00R.
Yokomizo, Yuji: *See*—
Ichinose, Noboru; Okuma, Hideo; Yokomizo, Yuji; Takahashi, Takashi; Nishihara, Mieko; and Katsura, Masaki, 4,259,292, Cl. 422-98.000.
York, Judd, to Countess York Limited. Convertible garment. 4,258,439, Cl. 2-69.500.
Yoshida, Akio: *See*—
Tanaka, Akira; Yoshida, Akio; and Haino, Kozo, 4,259,439, Cl. 430-582.000.
Yoshida, Hajime, to Hajime Industries, Ltd. Threshold setting circuit. 4,259,662, Cl. 340-146.3AG.
Yoshida, Matuju: *See*—
Fujisawa, Hideya; Omori, Norio; Yamazoe, Hisamitsu; and Yoshida, Matuju, 4,259,723, Cl. 364-431.000.
Yoshida, Seiki: *See*—
Ikeda, Hironosuke; Noda, Shigeaki; and Yoshida, Seiki, 4,259,416, Cl. 429-94.000.
Yoshida, Shigeru, to Canon Kabushiki Kaisha. Magnetic recording medium guiding apparatus. 4,259,699, Cl. 360-88.000.
Yoshioka, Hiroshi: *See*—
Shiga, Akinobu; Kakugo, Masahiro; Fukui, Yoshiharu; Yamada, Koji; Sadatoshi, Hajime; Wakamatsu, Kazuki; and Yoshioka, Hiroshi, 4,259,461, Cl. 525-247.000.
Yoshiyama, Toshio: *See*—
Ogino, Tetsuo; Sengo, Takashi; and Yoshiyama, Toshio, 4,259,565, Cl. 219-216.000.
Yoshizawa, Takanao: *See*—
Mori, Osamu; Yoshizawa, Takanao; and Samata, Kozo, 4,258,516, Cl. 52-126.000.
Young, D. Craig: *See*—
Gebhart, Daniel E.; Smith, Brace C.; Young, D. Craig; and Damerell, Jerry A., 4,258,544, Cl. 60-39.320.
Young, Ian R.; and Mistry, Ramesh, to EMI Limited. Magneto resistive magnetic transducers. 4,259,703, Cl. 360-113.000.
Young, Kevin M.: *See*—
Steenbergen, Suzanna M.; and Young, Kevin M., 4,259,451, Cl. 435-253.000.
Ytterfalk, Kjell: *See*—
Novak, Robert; and Ytterfalk, Kjell, 4,259,585, Cl. 250-456.000.
Yu, Chen S.: *See*—
Kazan, John; and Yu, Chen S., 4,259,521, Cl. 562-401.000.
Yukuta, Toshio; Yagura, Kazuo; and Fuchigami, Nobuhisa, to Bridgestone Tire Company Limited. Method of producing flexible reticulated polyether polyurethane foams. 4,259,452, Cl. 521-52.000.
Yum, Robert S. Differential transmission with limited torque transmitter. 4,258,588, Cl. 74-710.500.
Zaborowsky, Edward J.: *See*—
Wynne, Francis E., Jr.; Lopez, Jaime; and Zaborowsky, Edward J., 4,259,178, Cl. 208-131.000.
Zahnradfabrik Friedrichshafen, AG.: *See*—
Haegele, Gerhard; and Knoedler, Helmut, 4,258,584, Cl. 74-424.80R.
Liebert, Karl-Heinz; and Tischer, Werner, 4,258,752, Cl. 137-625.210.
Liebert, Karl-Heinz; and Tischer, Werner, 4,258,902, Cl. 251-214.000.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Ishizuka, Masaaki; Watanabe, Kiyoshi; Yamashita, Toshiaki; Naoi, Noriyuki; and Hidaka, Takayoshi, 4,259,319, Cl. 424-117.000.
Zaidan Hojin Handotai Kenkyu Shinkokai: *See*—
Nishizawa, Jun-ichi, 4,259,681, Cl. 357-41.000.
Zander, Hans-Hermann, to Siemens Aktiengesellschaft. Frequency converter with an intermediate d-c link. 4,259,714, Cl. 363-37.000.
Zeitlin, Harry; and Fernando, Quintus, to University Patents. Inc. Oxalic acid leaching of marine nodules. 4,259,295, Cl. 423-24.000.
Zeller, Adalbert; and Ruf, Wolfgang, to Schako-Metallwarenfabrik, Ferdinand Schad GmbH. Air outlet for room ventilation. 4,258,616, Cl. 98-40.00D.
Zengel, Hans-Georg; and Bergfeld, Manfred, to Akzona Incorporated. Preparation of bis-n-chloramides of cycloaliphatic carboxylic acids. 4,259,258, Cl. 260-543.00A.
Zimmerman, John C.: *See*—
McGraw, Thomas E.; and Zimmerman, John C., 4,258,793, Cl. 166-315.000.
Zimmerman, Steven M.: *See*—
Kaplan, Leon H.; and Zimmerman, Steven M., 4,259,430, Cl. 430-191.000.
Zimmermann, Rainer: *See*—
Engel, Wolfhard; Trummlitz, Gunter; Seeger, Ernst; Haarmann, Walter; Engelhardt, Gunther; and Zimmermann, Rainer, 4,259,336, Cl. 424-246.000.
Zink, Rudolf: *See*—
Koller, Stefan; Zink, Rudolf; and Schwander, Hansrudolf, 4,259,236, Cl. 260-156.000.
Zinnai, Sadazi; and Okayasu, Takeshi, to Tokyo Koso Kabushiki Kaisha. Valve sealing device. 4,258,901, Cl. 251-173.000.
Ziolkowski, Walter C.: *See*—
Taglang, Richard J.; and Ziolkowski, Walter C., 4,259,413, Cl. 428-548.000.
Ziph, Benjamin: *See*—
Meijer, Roelf J.; and Ziph, Benjamin, 4,258,590, Cl. 74-839.000.
Zocholl, Stanley E., to Gould Inc. Solid state relay. 4,259,706, Cl. 361-96.000.
Zoecon Corporation: *See*—
Anderson, Richard J., 4,259,348, Cl. 424-304.000.
Zur, Henry C. Beds and adjustable body supporting assemblies. 4,258,445, Cl. 5-66.000.
21st Century Products: *See*—
Gerst, Thomas L., 4,258,764, Cl. 144-193.00R.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 31ST DAY OF MARCH, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abdulla, Riaz F.; and Terando, Norman H., to Eli Lilly and Company. Preparation of benzoylureas. Re. 30,563, Cl. 544-336.000.

Brown, Ian F.; and Sharp, Colin K., to Ferranti Limited. Servo systems. Re. 30,564, Cl. 318-561.000.

Eli Lilly and Company: *See*—
Abdulla, Riaz F.; and Terando, Norman H., Re. 30,563, Cl. 544-336.000.
Miller, Jean C.; and Gutowski, Gerald E., Re. 30,560, Cl. 260-244.400.
Miller, Jean C.; and Gutowski, Gerald E., Re. 30,561, Cl. 260-244.400.

Ferranti Limited: *See*—
Brown, Ian F.; and Sharp, Colin K., Re. 30,564, Cl. 318-561.000.

Gutowski, Gerald E.: *See*—
Miller, Jean C.; and Gutowski, Gerald E., Re. 30,560, Cl. 260-244.400.
Miller, Jean C.; and Gutowski, Gerald E., Re. 30,561, Cl. 260-244.400.

Hanes Corporation: *See*—
Whittaker, Roger L.; and Hewitt, Clyde, Re. 30,557, Cl. 66-145.00R.

Harrington, Duane E. Integral cigarette paper holder element. Re. 30,558, Cl. 131-15.00R.

Hewitt, Clyde: *See*—
Whittaker, Roger L.; and Hewitt, Clyde, Re. 30,557, Cl. 66-145.00R.

Miller, Jean C.; and Gutowski, Gerald E., to Eli Lilly and Company. Oxazolidinedione derivatives of Vinca alkaloids. Re. 30,560, Cl. 260-244.400.

Miller, Jean C.; and Gutowski, Gerald E., to Eli Lilly and Company. Vinca alkaloid intermediates. Re. 30,561, Cl. 260-244.400.

Milwaukee Faucets, Inc.: *See*—
Schmitt, William C., Re. 30,559, Cl. 137-315.000.

Park, Hydow. Immunological testing devices. Re. 30,562, Cl. 435-296.000.

Schmitt, William C., to Milwaukee Faucets, Inc. Non-rise faucet assembly. Re. 30,559, Cl. 137-315.000.

Sharp, Colin K.: *See*—
Brown, Ian F.; and Sharp, Colin K., Re. 30,564, Cl. 318-561.000.

Terando, Norman H.: *See*—
Abdulla, Riaz F.; and Terando, Norman H., Re. 30,563, Cl. 544-336.000.

Whittaker, Roger L.; and Hewitt, Clyde, to Hanes Corporation. Yarn binder apparatus. Re. 30,557, Cl. 66-145.00R.

LIST OF DESIGN PATENTEES

Aarflot, Kjell. Cross country ski boot. 258,697, 3-31-81, Cl. D2-276.000.

Abrahams, Norman N.: *See*—
Corrigan, Daniel J.; Corrigan, Daniel J.; and Abrahams, Norman N., 258,762, Cl. D24-10.000.

Adamson, Jordy Z.; Palmer, Charles B.; and Ebling, Wade M. Squirting water toy. 258,742, 3-31-81, Cl. D21-59.000.

Addison, Carl E.; and Comes, Rocky J. Irrigation spray nozzle. 258,754, 3-31-81, Cl. D23-35.000.

Addison, Carl E.; and Comes, Rocky J. Irrigation spray nozzle. 258,755, 3-31-81, Cl. D23-35.000.

Allibert Exploitation: *See*—
Cornou, Jean, 258,723, Cl. D7-76.000.

Allibert Exploitation S.A.: *See*—
Steeg, Elie C., 258,721, Cl. D99-47.000.

Backstrom, Olof F., to Oy. Fiskars AB. Nail scissors. 258,714, 3-31-81, Cl. D8-57.000.

Baker, Edward D.; and Lang-Ree, Nils, to NPI Corporation. Tray for hamburger buns or the like. 258,711, 3-31-81, Cl. D7-37.000.

Banite, Inc.: *See*—
Lippman, Joel N.; and Lippman, Melvin A., 258,707, Cl. D6-95.000.

Baxter Travenol Laboratories, Inc.: *See*—
Evans, William M.; and Winchell, David A., 258,720, Cl. D9-370.000.

Black, Patsie W. Wall mounted feminine hygiene unit. 258,764, 3-31-81, Cl. D24-60.000.

Blackwelders: *See*—
Schmidt, Lewis W., 258,737, Cl. D15-123.000.

Brinkmann Corporation: *See*—
Natinsky, Ronald E., 258,728, Cl. D10-104.000.

Brown, Loren L.: *See*—
Docken, Melford H., 258,760, Cl. D23-18.000.

Broyhill Furniture Industries, Inc.: *See*—
Smith, Melbourne F., Jr., 258,708, Cl. D6-179.000.

Bruce, Gordon P.; Hawthorne, Allen D.; and Noyes, Eliot F., deceased (by Noyes, Mary D., co-executor), to International Business Machines Corp. Portable dictation machine or the like. 258,733, 3-31-81, Cl. D14-3.000.

Burtoft, William K.; and Troy, Thomas J., to CPG Products Corp. Toy vehicle. 258,747, 3-31-81, Cl. D21-128.000.

California R & D Center: *See*—
Jones, Lawrence T.; Lee, Robert S.; and Sims, Anson, 258,746, Cl. D21-128.000.

Cartier International B.V.: *See*—
Hocq, Robert, 258,725, Cl. D10-22.000.

Casio Computer Co., Ltd.: *See*—
Matsumoto, Hidero, 258,740, Cl. D18-7.000.

Ciener, David M. Lock bolt cover plate. 258,716, 3-31-81, Cl. D8-343.000.

CITC Industries Inc.: *See*—
Cohen, William J., 258,698, Cl. D2-279.000.

Clairol Incorporated: *See*—
Haran, Lynda; and Travers, Cynthia, 258,768, Cl. D28-9.000.

Cohen, William J., to CITC Industries Inc. Simulative sports shoe. 258,698, 3-31-81, Cl. D2-279.000.

Collin, Alvaro L.; and Patel, Gordhan M., to Kaiser Steel Corporation. Mine roof support plate. 258,718, 3-31-81, Cl. D8-399.000.

Comes, Rocky J.: *See*—
Addison, Carl E.; and Comes, Rocky J., 258,754, Cl. D23-35.000.
Addison, Carl E.; and Comes, Rocky J., 258,755, Cl. D23-35.000.

Commisso, Nicholas D.; and Palmer, Dwight O., to Mobil Oil Corporation. Hinged lid food container or the like. 258,722, 3-31-81, Cl. D9-423.000.

Cornou, Jean, to Allibert Exploitation. Combined storage and drainage container for seafood or the like. 258,723, 3-31-81, Cl. D7-76.000.

Corrigan, Daniel J.; Corrigan, Daniel J.; and Abrahams, Norman N. Dental amalgam capsule. 258,762, 3-31-81, Cl. D24-10.000.

Corrigan, Daniel J.: *See*—
Corrigan, Daniel J.; Corrigan, Daniel J.; and Abrahams, Norman N., 258,762, Cl. D24-10.000.

CPG Products Corp.: *See*—
Burtoft, William K.; and Troy, Thomas J., 258,747, Cl. D21-128.000.

CTM Computertechnik Muller GmbH: *See*—
Esslinger, Hartmut; Haug, Andreas; and Spreng, Georg, 258,735, Cl. D14-43.000.

Dinand, Pierre, to Jovan, Inc. Pressurized dispensing container. 258,719, 3-31-81, Cl. D9-300.000.

Docken, Melford H., to Brown, Loren L. Paint spray gun. 258,760, 3-31-81, Cl. D23-18.000.

Doyle, Donald L. Throat protecting attachment for a baseball catcher's mask. 258,695, 3-31-81, Cl. D2-234.000.

Eaton Corporation: *See*—
Hallaman, Allan D.; and Wyckoff, Dennis, 258,750, Cl. D21-222.000.

Ebling, Wade M.: *See*—
Adamson, Jordy Z.; Palmer, Charles B.; and Ebling, Wade M., 258,742, Cl. D21-59.000.

Electrolux Corporation: *See*—
Lampe, Robert C.; and Schick, George, 258,753, Cl. D23-03.000.

Esslinger, Hartmut; Haug, Andreas; and Spreng, Georg, to CTM Computertechnik Muller GmbH. Display screen—terminal. 258,735, 3-31-81, Cl. D14-43.000.

Evans, Catherine C., to Will Ross Inc. Nurse's headwear. 258,696, 3-31-81, Cl. D2-237.000.

Evans, William M.; and Winchell, David A., to Baxter Travenol Laboratories, Inc. Bottle. 258,720, 3-31-81, Cl. D9-370.000.

Farnam Companies, Inc.: *See*—
Lindley, Donald C., 258,751, Cl. D22-19.000.

Fleischman, Debra; and Rick, David A. Bicycle bag. 258,731, 3-31-81, Cl. D12-158.000.

Fletcher, Robert, to Paramount Pictures Corporation. Belt buckle. 258,700, 3-31-81, Cl. D2-447.000.

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General Motors Corporation: *See*—
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Gipson, Donald G. Combined bracket and locking support hook unit for holding truck tire chains while not in use. 258,715, 3-31-81, Cl. D8-333.000.

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Graham, Herbert B., to Precision Media Inc. Disposable culture device or the like. 258,761, 3-31-81, Cl. D24-8.000.

Gudgel, Howard S. Lens support for slide projector. 258,738, 3-31-81, Cl. D16-26.000.

Hallaman, Allan D.; and Wyckoff, Dennis, to Eaton Corporation. Putter grip. 258,750, 3-31-81, Cl. D21-222.000.

Haran, Lynda; and Travers, Cynthia, to Clairol Incorporated. Tray for hairsetter kit. 258,768, 3-31-81, Cl. D28-9.000.

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Harshman, Arthur L.; and Waterfield, Martin J., to Florists' Transworld Delivery Association. Vase. 258,729, 3-31-81, Cl. D11-154.000.

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Kobayashi, Hiroshi. Combined check book cover and calculator. 258,704, 3-31-81, Cl. D3-56.000.

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Larson, Hal, to Woodcutters Manufacturing, Inc. Manifold for a forced air fireplace furnace. 258,756, 3-31-81, Cl. D23-127.000.

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Linna, Sakari; and Ulvio, Kari. Game board. 258,741, 3-31-81, Cl. D21-32.000.

Lippman, Joel N.; and Lippman, Melvin A., to Banite, Inc. Dispenser. 258,707, 3-31-81, Cl. D6-95.000.

Lippman, Melvin A.: *See*—
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Ruga, Wayne. Angled structural connector. 258,744, 3-31-81, Cl. D21-108.000.

Schick, George: *See*—
Lampe, Robert C.; and Schick, George, 258,753, Cl. D23-03.000.

Schinella, John R., to General Motors Corporation. Vehicle wheel. 258,732, 3-31-81, Cl. D12-211.000.

Schmidt, Lewis W., to Blackwelders. Rear dump refuse compactor. 258,737, 3-31-81, Cl. D15-123.000.

Sims, Anson: *See*—
Jones, Lawrence T.; Lee, Robert S.; and Sims, Anson, 258,746, Cl. D21-128.000.

Smith, Melbourne F., Jr., to Broyhill Furniture Industries, Inc. Occasional table. 258,708, 3-31-81, Cl. D6-179.000.

Solartron Electronic Group Limited: *See*—
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Stutzer, Franz A., to Rowenta-Werke, GmbH. Lighter. 258,767, 3-31-81, Cl. D27-42.000.

Swinstead, Nicholas D., to Solartron Electronic Group Limited. Digital multimeter or similar article. 258,727, 3-31-81, Cl. D10-78.000.

Sylvester, Gordon: *See*—
Genaro, Donald M.; and Sylvester, Gordon, 258,736, Cl. D14-93.000.

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LIST OF PLANT PATENTEES

Board of Trustees, a Constitutional Corp. operating Michigan State University: *See*—
Carlson, Robert F., 4,678, Cl. 34.000.
Bringhurst, Royce S.; and Voth, Victor, to University of California, The Regents of the. Strawberry plant. 4,679, 3-31-81, Cl. 48.000.
Carlson, Robert F., to Board of Trustees, a Constitutional Corp. operating Michigan State University. Apple rootstock tree. 4,678, 3-31-81, Cl. 34.000.
Moore, Ralph S. Miniature rose plant. 4,680, 3-31-81, Cl. 10.000.
University of California, The Regents of the: *See*—
Bringhurst, Royce S.; and Voth, Victor, 4,679, Cl. 48.000.
Voth, Victor: *See*—
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CLASSIFICATION OF PATENTS

ISSUED MARCH 31, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

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1.24 4,258,777

CLASS 160

383 4,258,778

CLASS 162

3 4,259,146
12 4,259,147
24 4,259,148
29 4,259,149
40 4,259,150
239 4,259,151

CLASS 165

1 4,258,779
2 4,258,780
67 4,258,781
109 T 4,258,782
133 4,258,783
166 4,258,784
175 4,258,785

CLASS 166

72 4,258,786
120 4,258,787
185 4,258,788
252 4,258,789
293 4,258,790
302 4,258,791
315 4,258,792
4,258,793
356 4,258,794

CLASS 169

19 4,258,795

CLASS 172

796 4,258,797

CLASS 173

168 4,258,798
169 4,258,799

CLASS 174

23 C 4,259,540
42 4,259,541
48 4,259,542
70 S 4,259,543
102 R 4,259,544
139 4,259,545
153 R 4,259,546

CLASS 175

52 4,258,796
61 4,258,800
65 4,258,801
103 4,258,802
233 4,258,803
325 4,258,804
344 4,258,805
370 4,258,806
375 4,258,807
394 4,258,808

CLASS 176

19 LD 4,259,152
30 4,259,153
38 4,259,154
78 4,259,155
87 4,259,156

CLASS 177

1 4,258,809
126 4,258,814
128 4,258,810
200 4,258,811
210 R 4,258,812

CLASS 179

1 B 4,259,547
5 R 4,259,548
18 ES 4,259,549
115.5 VC 4,259,550

CLASS 180

6.48 4,258,815
68.5 4,258,816
127 4,258,817
168 4,258,813
233 4,258,818
287 4,258,819
295 4,258,820

CLASS 181

202 4,258,821
213 4,258,822
214 4,258,823
233 4,258,824

CLASS 182

14 4,258,825
20 4,258,826
33.3 4,258,827
95 4,258,828

CLASS 183

112 4,258,599

CLASS 187

29 R 4,258,829

CLASS 188

52 4,258,830
119 4,258,831
184 4,258,832

CLASS 190

11 4,258,833

CLASS 191

12.2 R 4,258,834
23 A 4,258,835

CLASS 192

84 C 4,258,836

CLASS 194

1 N 4,258,837
1 R 4,258,838

CLASS 198

478 4,258,839
502 4,258,840
687 4,258,841

CLASS 200

5 A 4,259,551
6 R 4,259,552
81 R 4,259,553
147 R 4,259,554
148 R 4,259,555
4,259,556
275 4,259,557
283 4,259,558
311 4,259,559

CLASS 201

39 4,259,157

CLASS 202

121 4,259,158
269 4,259,159

CLASS 203

1 4,259,160

CLASS 204

67 4,259,161
159.16 4,259,162
181 T 4,259,163
195 F 4,259,164
195 P 4,259,165
279 4,259,166

CLASS 206

45.34 4,258,842
63.3 4,258,843
188 4,258,844
221 4,258,845
412 4,258,846
504 4,258,847
524.2 4,258,848
812 4,258,849

CLASS 208

8 LE 4,259,167
4,259,168
25 4,259,169
33 4,259,170
45 4,259,171
46 4,259,172
4,259,173
111 4,259,174
113 4,259,175
120 4,259,176
127 4,259,177
131 4,259,178

CLASS 209

18 4,259,179
211 4,259,180
231 4,259,181
655 4,258,850
700 4,258,851

CLASS 210

85 4,259,184
195.3 4,259,185
198.2 4,259,186
446 4,259,187
448 4,259,188
629 4,259,182
654 4,259,183

CLASS 212

178 4,258,852
264 4,258,853

CLASS 215

21 4,258,854

CLASS 219

10.55 A 4,259,561
10.55 M 4,259,560
68 4,259,562
121 LJ 4,259,563
216 4,259,564
4,259,565
222 4,259,566
327 4,259,567

CLASS 220

8 4,258,855
22.3 4,258,856
212 4,258,857
222 4,258,858
270 4,258,859

CLASS 221

75 4,258,860
213 4,258,861

CLASS 222

56 4,258,862
83 4,258,863
96 4,258,864
213 4,258,865
333 4,258,866
507 4,258,867
602 4,258,868

CLASS 224

32 A 4,258,869
4,258,870
192 4,258,871

CLASS 226

91 4,258,872

CLASS 227

4 4,258,873

CLASS 229

23 BT 4,258,874
34 HW 4,258,881
41 B 4,258,875
43 4,258,876

CLASS 235

1 D 4,259,568
463 4,259,569

CLASS 236

49 4,258,877

CLASS 237

8 R 4,258,878
51 4,258,879
56 4,258,880

CLASS 239

73 4,258,882
124 4,258,883
390 4,258,884
707 4,258,885

CLASS 241

101.7 4,258,886

CLASS 242

107.4 A 4,258,887

CLASS 244

17.17 4,258,888
207 4,258,889
223 4,258,890

CLASS 248

98 4,258,891
220.4 4,258,892
441 B 4,258,893
483 4,258,894
544 4,258,895
573 4,258,896

CLASS 249

11 4,258,897
119 4,258,898

CLASS 250

214 A 4,259,570
223 B 4,259,571
281 4,259,572
287 4,259,573
302 4,259,574
336 4,259,575
338 4,259,576
358 R 4,259,577
363 S 4,259,578
368 4,259,579
402 4,259,580
4,259,581
4,259,582
416 TV 4,259,583
445 T 4,259,584
456 4,259,585
481 4,259,586
483 4,259,588
486 4,259,587
558 4,259,589
560 4,259,590
4,259,591
574 4,259,592

CLASS 251

11 4,258,899
172 4,258,900
173 4,258,901
214 4,258,902
313 4,258,903
339 4,258,904

CLASS 252

8.55 D 4,259,191
8.6 4,259,190
32.7 E 4,259,192
33 4,259,193
34.7 4,259,206
46.4 4,259,194
49.7 4,259,195
62 4,259,196
62.58 4,259,197
70 4,259,198
99 4,259,199
102 4,259,200
103 4,259,201
107 4,259,202
174.14 4,259,203
174.16 4,259,204
326 4,259,205
408 4,259,207
429 B 4,259,208
430 4,259,209
438 4,259,210
443 4,259,211
455 Z 4,259,212
463 4,259,213
522 R 4,259,214
528 4,259,215
545 4,259,216
547 4,259,217

CLASS 254

29 R 4,258,905

CLASS 260

5 4,259,218
22 A 4,259,219
27 BB 4,259,220
29.2 E 4,259,222
29.2 N 4,259,221
29.6 AN 4,259,189
29.6 H 4,259,223
31.2 XA 4,259,224
31.8 B 4,259,225
33.4 F 4,259,226
37 N 4,259,227
40 R 4,259,228
42.21 4,259,229
42.46 4,259,230
42.52 4,259,231
112 B 4,259,233
112 R 4,259,232
112.5 R 4,259,234
152 4,259,235
156 4,259,236
206 4,259,237
239 BE 4,259,238
239.3 R 4,259,239
239.55 R 4,259,240
243.3 4,259,241
244.4 Re.30,560
Re.30,561
4,259,242
343.6 4,259,243
346.22 4,259,244
4,259,245
346.75 4,259,246
348.35 4,259,247
369 4,259,248
404 4,259,249
408 4,259,250
412.5 4,259,251
412.6 4,259,252
418 4,259,253
429 R 4,259,254
456 P 4,259,255
465 E 4,259,256
501.18 4,259,257
543 A 4,259,258

CLASS 261

41 D 4,259,265
44 C 4,259,266
93 4,259,267
151 4,259,268
4,259,269

CLASS 264

8 4,259,270
4,259,271
23 4,259,272
42 4,259,273
46.5 4,259,274
68 4,259,276
75 4,259,277
81 4,259,278
86 4,259,279
101 4,259,280
102 4,259,281
148 4,259,282
152 4,259,283
184 4,259,284
284 4,259,285
555 4,259,286

CLASS 266

250 4,258,906

CLASS 269

69 4,258,907
239 4,258,908

CLASS 271

181 4,258,909

CLASS 272

1 R 4,258,910
3 4,258,911
8 D 4,258,912
67 4,258,913
71 4,258,914
111 4,258,915

CLASS 273

26 R 4,258,916
65 ED 4,258,917
110 4,258,918
146 4,258,919
157 R 4,258,920
232 4,258,921
302 4,258,922
398 4,258,923
411 4,258,924

CLASS 277

29 4,258,925
116.4 4,258,926
152 4,258,927

CLASS 279

1 L 4,258,928

CLASS 280

154.5 R 4,258,929
508 4,258,930
734 4,258,931
781 4,258,932
804 4,258,933
806 4,258,934

CLASS 285

21 4,258,935
31 4,258,936
61 4,258,937
93 4,258,938
137 R 4,258,939
4,258,940
197 4,258,941
245 4,258,942
340 4,258,943
342 4,258,944

CLASS 292

68 4,258,945
144 4,258,946

CLASS 294

15 4,258,947
26 4,258,948
81 SF 4,258,949

CLASS 296

56 4,258,950

CLASS 297

16 4,258,951
258 4,258,952

CLASS 298

27 4,258,953

CLASS 299

4 4,258,954
5 4,258,955
14 4,258,956
82 4,258,957

CLASS 303

6 A 4,258,958
7 4,258,959

CLASS 307

117 4,259,593
141 4,259,594
221 D 4,259,596
4,259,597
4,259,598
255 4,259,599
262 4,259,686
270 4,259,600
359 4,259,601
452 4,259,595

CLASS 308

238 4,258,960

CLASS 310

12 4,259,602
68 B 4,259,603
113 4,259,604
317 4,259,605
343 4,259,606
364 4,259,607

CLASS 312

111 4,258,961
125 4,258,962
194 4,258,963
224 4,258,964
266 4,258,965
305 4,258,966
322 4,258,967

CLASS 313

372 4,259,609
398 4,259,608
417 4,259,610
422 4,259,612
497 4,259,613

CLASS 315

219 4,259,614
241 P 4,259,615
256 4,259,616
326 4,259,617
360 4,259,618
361 4,259,619

CLASS 318

85 4,259,621
86 4,259,622
249 4,259,623
282 4,259,624
328 4,259,625
561 Re.30,564
599 4,259,626
600 4,259,627
799 4,259,628
802 4,259,620
807 4,259,629
4,259,630

CLASS 324

57 SS 4,259,631
61 R 4,259,632
65 R 4,259,633
74 4,259,634
149 4,259,635
158 D 4,259,636
166 4,259,637
306 4,259,638
430 4,259,639
439 4,259,640

CLASS 329

101 4,259,641

CLASS 330

288 4,259,642
4,259,643

CLASS 331

2 4,259,644
94.5 G 4,259,645
4,259,646
96 4,259,647

CLASS 332

9 R 4,259,648

CLASS 333

144 4,259,649
166 4,259,650

CLASS 335

16 4,259,651
128 4,259,652
230 4,259,653

CLASS 336

84 R 4,259,654

CLASS 337

361 4,259,655
407 4,259,656

CLASS 338

22 R 4,259,657

CLASS 339

14 L 4,258,968
14 P 4,258,969
38 4,258,970

52 S 4,258,971
59 R 4,258,972
95 R 4,258,973
97 P 4,258,975
97 R 4,258,974

CLASS 340

26 4,259,658
73 4,259,659
120 4,259,660
146.3 AG 4,259,662
146.3 AQ 4,259,661
147 LP 4,259,663
539 4,259,664
575 4,259,665
647 4,259,666
707 4,259,667
711 4,259,668

CLASS 343

5 EM 4,259,669
700 MS 4,259,670
704 4,259,671
722 4,259,672
825 4,259,673
909 4,259,674

CLASS 346

1 4,259,675
76 PH 4,259,676
124 4,259,677

CLASS 350

96.20 4,258,976
96.21 4,258,977
96.25 4,258,978
252 4,258,982
293 4,258,979
307 4,258,983
357 4,258,984
459 4,258,985
463 4,258,980
475 4,258,981

CLASS 353

26 R 4,258,986
95 4,258,987

CLASS 354

25 4,258,988
4,258,989
29 4,258,990
32 4,258,991
51 4,258,992
60 A 4,258,993
75 4,258,994
153 4,258,995
173 4,258,997
4,258,998
196 4,258,996
266 4,259,001
268 4,258,999
293 4,259,000
319 4,259,002

CLASS 355

3 CH 4,259,003
8 4,259,004
10 4,259,005
4,259,006
27 4,259,007
29 4,259,008

CLASS 356

1 4,259,009
2 4,259,010
30 4,259,011
39 4,259,012
237 4,259,013
328 4,259,014
336 4,259,015
350 4,259,016
375 4,259,017
4,259,018
400 4,259,019
402 4,259,020

CLASS 357

13 4,259,678
17 4,259,679
35 4,259,680
41 4,259,681
55 4,259,682
64 4,259,683
74 4,259,684
81 4,259,685

CLASS 358

67 4,259,687
107 4,259,688
165 4,259,689
183 4,259,690
219 4,259,691
237 4,259,692
261 4,259,693
283 4,259,694
291 4,259,695
296 4,259,696
299 4,259,697

CLASS 360

70 4,259,698
88 4,259,699
95 4,259,700
96.5 4,259,701
4,259,702
113 4,259,703

CLASS 361

16 4,259,704
56 4,259,705
96 4,259,706
212 4,259,707
318 4,259,708

CLASS 362

231 4,259,709
267 4,259,710
304 4,259,711
310 4,259,712

CLASS 363

35 4,259,713
37 4,259,714
60 4,259,715
97 4,259,716

CLASS 364

200 4,259,717
4,259,718
4,259,719
4,259,720
414 4,259,721
424 4,259,722
431 4,259,723
491 4,259,724
521 4,259,725
821 4,259,726

CLASS 365

16 4,259,727
45 4,259,728
149 4,259,729
156 4,259,730
206 4,259,731

CLASS 366

118 4,259,021
152 4,259,022
220 4,259,023
339 4,259,024

CLASS 367

13 4,259,732
61 4,259,733
101 4,259,734

CLASS 368

34 4,259,735
62 4,259,736
66 4,259,737

CLASS 370

102 4,259,738

CLASS 375

99 4,259,740

CLASS 400

18 4,259,025
124 4,259,026

CLASS 403

132 4,259,027

CLASS 405

282 4,259,028
4,259,029
303 4,259,030

CLASS 406

21 4,259,031
62 4,259,032

CLASS 407

114 4,259,033

CLASS 411

406 4,258,606
417 4,258,607

CLASS 414

24.6 4,259,034
38 4,259,035
388 4,259,036

CLASS 416

96 R 4,259,037

CLASS 417

53 4,259,038
220 4,259,039
493 4,259,040
559 4,259,041
566 4,259,042

CLASS 418

55 4,259,043
82 4,259,044
200 4,259,045

CLASS 422

59 4,259,287
63 4,259,288
64 4,259,289
65 4,259,290
82 4,259,291
98 4,259,292
109 4,259,293
190 4,259,294

CLASS 423

24 4,259,295
53 4,259,296
55 4,259,297
135 4,259,298
210 4,259,299
224 4,259,300
228 4,259,301
237 4,259,302
239 4,259,303
244 4,259,304
300 4,259,305
325 4,259,306
447.4 4,259,307
449 4,259,308
481 4,259,309
561 R 4,259,310
625 4,259,311
659 4,259,312

CLASS 424

8 4,259,313
19 4,259,314
37 4,259,315
52 4,259,316
93 4,259,317
94 4,259,318
117 4,259,319
118 4,259,320
120 4,259,321
150 4,259,322
153 4,259,323
180 4,259,324
200 4,259,330
227 4,259,331
230 4,259,332
238 4,259,325
246 4,259,326
4,259,333
4,259,336
248.53 4,259,328
248.57 4,259,327
250 4,259,334
258 4,259,335
260 4,259,329
267 4,259,337
4,259,338
269 4,259,339
4,259,340
270 4,259,341
4,259,342
272 4,259,343
273 B 4,259,344
273 R 4,259,345
4,259,346
304 4,259,347
4,259,348
305 4,259,349
308 4,259,350
309 4,259,351
316 4,259,352
319 4,259,353
329 4,259,354

CLASS 425

8 4,259,046
72 R 4,259,047
72 S 4,259,048
73 4,259,049
88 4,259,050
133.1 4,259,051
135 4,259,052
222 4,259,053
344 4,259,054
376 A 4,259,055
463 4,259,057
533 4,259,056

CLASS 426

5 4,259,355
42 4,259,356
4,259,357
46 4,259,358
62 4,259,359
231 4,259,360
285 4,259,361
622 4,259,362
646 4,259,363
656 4,259,364

CLASS 427

46 4,259,365
88 4,259,366
96 4,259,367
130 4,259,368
155 4,259,369
162 4,259,370
226 4,259,371
236 4,259,372
242 4,259,373
267 4,259,375
282 4,259,374
304 4,259,376
346 4,259,377
352 4,259,378
356 4,259,379
428 4,259,380

CLASS 428

13 4,259,381
36 4,259,382
72 4,259,383
97 4,259,384
135 4,259,385
159 4,259,386
167 4,259,387
174 4,259,388
192 4,259,389
195 4,259,390
4,259,391
212 4,259,392
224 4,259,393
229 4,259,394
248 4,259,395
265 4,259,396
283 4,259,398
288 4,259,397
4,259,399
4,259,400
306 4,259,401
310 4,259,402
378 4,259,403
395 4,259,404
4,259,405
410 4,259,406
421 4,259,407
424.6 4,259,408
428 4,259,409
461 4,259,410
511 4,259,411
516 4,259,412
548 4,259,413

CLASS 429

17 4,259,414
90 4,259,415
94 4,259,416
101 4,259,417
111 4,259,418
174 4,259,419
196 4,259,420

CLASS 430

5 4,259,421
17 4,259,422
30 4,259,423
48 4,259,424
56 4,259,425
98 4,259,426
107 4,259,427
115 4,259,428
124 4,259,429
191 4,259,430
199 4,259,431
281 4,259,432
296 4,259,433
302 4,259,434
313 4,259,435
314 4,259,436
382 4,259,437
567 4,259,438
582 4,259,439

CLASS 431

220 4,259,058
254 4,259,059

CLASS 432

3 4,259,060
13 4,259,061
78 4,259,062
124 4,259,063
222 4,259,064

CLASS 433

5 4,259,065
78 4,259,066
93 4,259,067
140 4,259,068
144 4,259,069
149 4,259,070
166 4,259,071
173 4,259,072
177 4,259,073
214 4,259,074
217 4,259,075
225 4,259,076

CLASS 434

94 4,258,478
118 4,259,077
202 4,258,477
211 4,258,479

CLASS 435

15 4,259,440
23 4,259,441
36 4,259,442
137 4,259,443
172 4,259,444
178 4,259,445
199 4,259,446
215 4,259,447
4,259,448
241 4,259,449
253 4,259,450
4,259,451
296 Re.30,562

CLASS 440

53 4,258,642

CLASS 455

12 4,259,741
52 4,259,742
81 4,259,743
103 4,259,744
159 4,259,745
600 4,259,746

CLASS 474

254 4,258,582

CLASS 493

22 4,258,613

CLASS 521

52 4,259,452
85 4,259,453
113 4,259,454
122 4,259,455

CLASS 525

3 4,259,456
39 4,259,457
68 4,259,458
154 4,259,459
208 4,259,460
247 4,259,461
263 4,259,462
331 4,259,463
480 4,259,464

CLASS 526

65 4,259,465
142 4,259,466
279 4,259,467
283 4,259,468
288 4,259,469
348.2 4,259,470

CLASS 528

9 4,259,471
72 4,259,472
138 4,259,473
307 4,259,478
388 4,259,474
397 4,259,475

CLASS 536

17 A 4,259,476
114 4,259,477

CLASS 542

426 4,259,479
4,259,480
4,259,481

CLASS 544

8 4,259,482
57 4,259,483
87 4,259,484
90 4,259,485
173 4,259,486
218 4,259,487
296 4,259,488
336 Re.30,563
4,259,489
369 4,259,490

CLASS 546

8 4,259,491
21 4,259,492
96 4,259,493
202 4,259,494
345 4,259,495
4,259,496

CLASS 548

144 4,259,497
207 4,259,498
211 4,259,499
215 4,259,500
246 4,259,501
255 4,259,502
4,259,503
262 4,259,504
4,259,505

CLASS 549

23 4,259,506
34 4,259,507
72 4,259,508
77 4,259,509

CLASS 560

21 4,259,510
25 4,259,511
119 4,259,512
121 4,259,513
4,259,514
4,259,515
4,259,516
4,259,517
176 4,259,518
193 4,259,519
204 4,259,520

CLASS 562

401 4,259,521
412 4,259,522
500 4,259,523
526 4,259,524
559 4,259,525

CLASS 564

99 4,259,261
137 4,259,259
331 4,259,526
459 4,259,260
491 4,259,262

CLASS 568

311 4,259,527
379 4,259,528
4,259,529
454 4,259,530
617 4,259,531
649 4,259,532
697 4,259,533
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D2—	234	258,695		179	258,708	D9—	300	258,719		43	258,735			258,747		146	258,758
	237	258,696		191	258,709		370	258,720		93	258,736		134	258,748			258,759
	276	258,697	D7—	4	258,710		423	258,722	D15—	123	258,737		175	258,749	D24—	8	258,761
	279	258,698		37	258,711	D10—	22	258,725	D16—	26	258,738		222	258,750		10	258,762
	378.1	258,699		65	258,712		74	258,726	D17—	14	258,739	D22—	19	258,751		16	258,763
	447	258,700		76	258,723		78	258,727	D18—	7	258,740		25	258,752		60	258,764
D3—	25	258,701		110	258,713		104	258,728	D21—	32	258,741	D23—	03	258,753	D25—	18	258,765
	33	258,702	D8—	57	258,714	D11—	154	258,729		59	258,742		18	258,760		74	258,766
	36	258,703		333	258,715	D12—	101	258,730		108	258,743		35	258,754	D27—	42	258,767
	56	258,704		343	258,716		158	258,731			258,744			258,755	D28—	9	258,768
	74	258,705		346	258,717		211	258,732		115	258,745		127	258,756		35	258,769
D6—	73	258,706		394	258,724	D14—	3	258,733		128	258,746		139	258,757	D99—	47	258,721
	95	258,707		399	258,718		17	258,734									

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